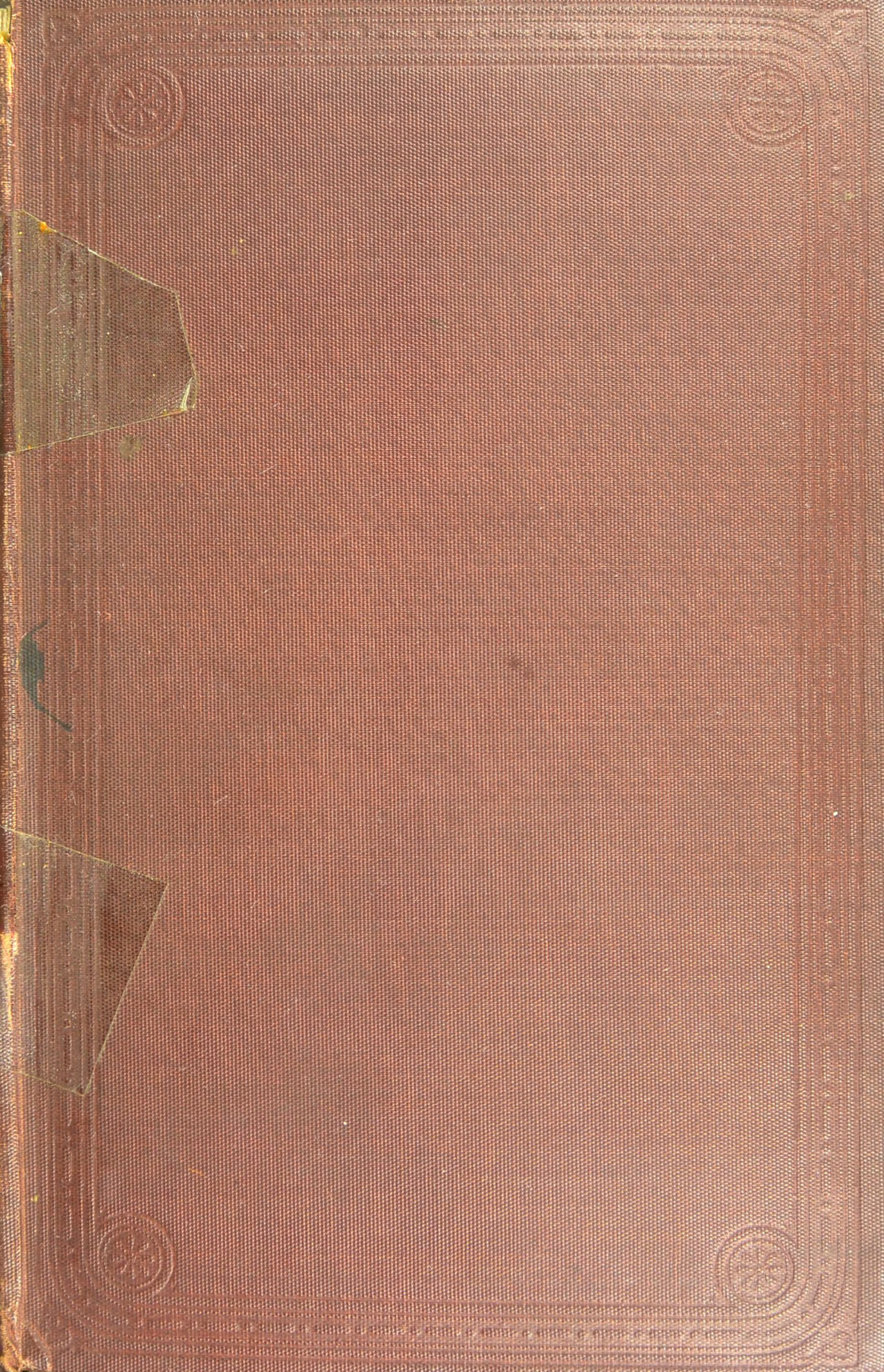




HENRY J. HAMILTON
Medical Bookseller,
DEALER IN OSTEOLOGY,
82, HIGH HOLBORN,
LONDON W.C.

*The University Library
Leeds*



*Medical and Dental
Library*



30106

004251152

STORE

WP 140

604

1426

STORE

PRACTICAL TREATISE
ON THE
DISEASES OF THE UTERUS
OVARIES AND FALLOPIAN TUBES

PRACTICAL TREATISE

ON THE

LEEDS & WEST RIDING

MEDICO-CHIRURGICAL SOCIETY

DISEASES OF THE UTERUS

OVARIES AND FALLOPIAN TUBES

BY

A. COURTY

PROFESSOR OF CLINICAL SURGERY, MONTPELLIER

TRANSLATED FROM THE THIRD EDITION

BY HIS PUPIL

AGNES M'LAREN, M.D., M.K.Q.C.P.I.

WITH PREFACE

BY

J. MATTHEWS DUNCAN, M.D., LL.D., F.R.S.E.

OBSTETRIC PHYSICIAN TO ST BARTHOLOMEW'S HOSPITAL



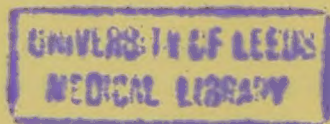
LONDON

J. & A. CHURCHILL

NEW BURLINGTON STREET

1882

“ LA PRÉCISION DU DIAGNOSTIC ET L'OPPORTUNITÉ DU
TRAITEMENT SONT LES SEULS GARANTS DE SUCCÈS DANS LA
PRATIQUE.”



604514

P R E F A C E

IN recent times gynæcology has been developed in a very remarkable manner; and while there can be no doubt that, on the whole, the luxuriant growth is healthy and beneficent, it is also certain that much of it, both in theory and in practice, is rank and doomed to destruction, or at least oblivion. Too little of the spirit and method of science has as yet permeated gynæcology, and in this respect its state may be contrasted with that of the nearly allied department of obstetrics.

This modern development of gynæcology began in France in the earlier years of this century, and a kind of medical enthusiasm soon appeared, which gradually grew and overspread Great Britain, Germany, and America. It would be hard now to say where the still growing enthusiasm is most prevalent. It has extended over the whole world, and several unassailable statistical statements have been made (Dr James R. Chadwick), which render it probable that nowhere does gynæcology thrive so vigorously as in the United States of America. New hospitals, books, journals, societies, practitioners, specially devoted to it, are now to be found in all parts of the globe in greater or less number, and can be counted and valued; and those of the great French nation hold a distinguished place.

Among books devoted to diseases of women none has been, or is, more important than that of Professor Courty, of Montpellier. It is the carefully elaborated and repeatedly revised work of a man at once imbued with the science and immersed in the practice of gynæcology, of one who has long lived in a centre of general science and learning, amidst an abounding population, and who enjoys the great advantage of combining in his sphere of practical activity both hospital and private patients—two classes which differ in their circumstances and in their aspects for observation, favorable and unfavorable to the student.

It is certainly a boon to the English-speaking peoples to have Courty's work translated; for the great mass of medical men are, un-

fortunately, ignorant of French, or not familiar enough with that language to enable them to use the book in its original form.

This translation of a work on women has been, with striking appropriateness, executed by a woman doctor. I have had the privilege of her friendship since her childhood, and know her excellent qualities. She has already, by original work, shown her competence in an important respect for this now completed task of translation. But she is, in addition, specially qualified, having studied in the University of Montpellier, under Dr Courty among others, and having, subsequently to her graduation, been for a considerable time his assistant in practice. Moreover, since she settled in Edinburgh, Dr M'Laren has, in her own practice, maintained her familiarity with the diseases treated of in this book.

Courty's work has, since its first publication, been recognised everywhere as an exponent of French doctrine. In France its position is attested by the sale of two editions, numbering, I am told, 10,000 copies, and by the appearance of another, the third edition. It is from this third edition that this translation has been made. The translation is not a simple reproduction in English of the chapters of the third French edition, for it has been abridged by omissions planned by the author himself. As it now appears it is a treatise on the diseases of the uterus, Fallopian tubes, and ovaries, with an introductory chapter on the anatomy, physiology, and teratology of the organs of generation. I recommend to the careful study of my professional brethren a book which has already been crowned by the institute of France.

J. MATTHEWS DUNCAN.

CONTENTS

INTRODUCTION

ON THE ANATOMY, PHYSIOLOGY, AND TERATOLOGY OF THE ORGANS OF GENERATION

	PAGE
The Ovaries and Fallopian Tubes—the Uterus—Ligaments and Append- ages of the Uterus—Changes in the Uterus at Different Stages— Structure of the Uterus—the Vagina and Vulva—Development: Comparison of the Genital Economy in the Two Sexes—Anomalies .	3

PART I

GENERAL SURVEY OF UTERINE DISEASES

CHAPTER I

Diagnosis of Uterine Diseases in General—Presumptive Signs furnished by the Symptomatology of Uterine Diseases—Certain Signs furnished by Direct Exploration	95
--	----

CHAPTER II

Treatment of Uterine Diseases in General—Indications to be Fulfilled in the Treatment of Uterine Diseases—Methods of Treatment and Various Medications—Means of Fulfilling Indications in the Treat- ment of Uterine Diseases	151
--	-----

CHAPTER III

General Characteristics of Uterine Diseases—Their Frequency—Predis- posing Causes—General and Local Symptoms—Complications— Prognosis—Classification	233
--	-----

PART II

UTERINE DISEASES IN DETAIL

CHAPTER I

PAGE

Functional Disorders.—Menstruation—Amenorrhœa—Retention of the Menses—Deviation of the Menses and Supplementary Menstruation—Dysmenorrhœa—Uterine Neuralgia—Uterine Hæmorrhage	257
--	-----

CHAPTER II

Changes of Position—Displacements—Deviations—Flexions—Inversion	343
---	-----

CHAPTER III

Morbid States without Neoplasm—Fluxion—Congestion—Engorgement—Metritis—Ovaritis and Salpingitis—Peri-uterine Inflammation—of Leucorrhœa in General and Uterine Catarrh in Particular—Hypertrophy and Atrophy—Granulations and Fungosities—Ulceration and Ulcers of the Uterine Cervix	460
---	-----

CHAPTER IV

Organic Alterations—Fibrous Tumours—Polypi and Moles—Tubercle—Cancer	648
--	-----

CHAPTER V

Diseases of the Uterine Appendages—Pelvic Hæmorrhages and Peri-uterine Hematocele—Cyst of the Ovary and Genito-pelvic Tumour—Sterility	714
--	-----

INDEX	803
-----------------	-----

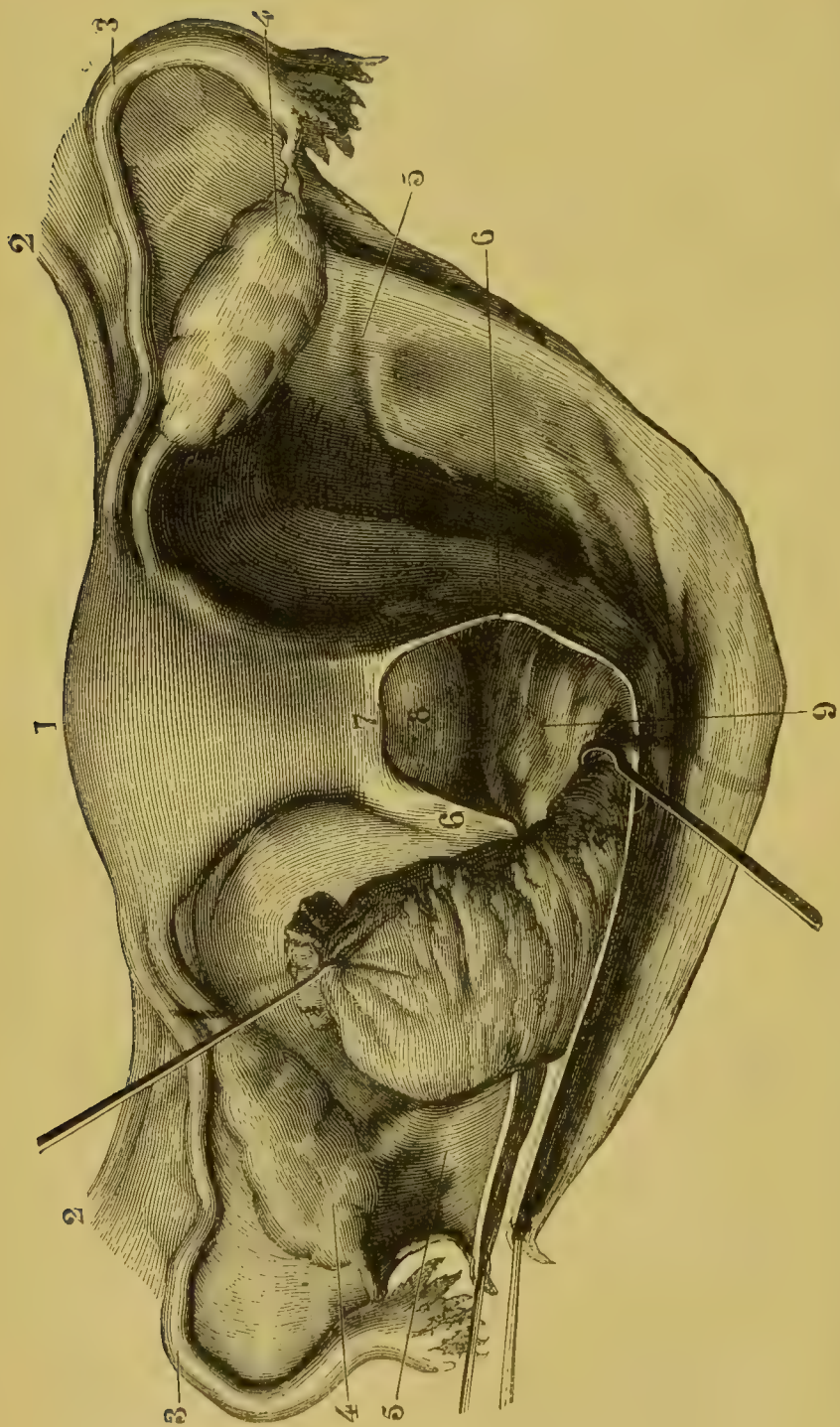


FIG. 1.—General view of the uterus from its posterior side, showing the relationship of this organ with its appendages, the round ligaments (2, 2), the Fallopian tubes (3, 3), and the ovaries (4, 4); the posterior folds of the broad ligaments (5, 5); the continuity of these posterior folds with the peritoneal folds called Douglas's ligaments (6, 6); the utero-sacral, or utero-lumbar ligaments, the principal means of suspension of the organ contained in these peritoneal folds, passing off from the upper third of the cervix (7); the vaginal cul-de-sac formed between Douglas's ligaments by the reflexion of the peritoneum from the posterior side of the cervix (8) and of the vagina to the anterior side of the rectum (9).

ON THE DISEASES OF THE UTERUS, OVARIES AND FALLOPIAN TUBES

INTRODUCTION

ON THE ANATOMY, PHYSIOLOGY, AND TERATOLOGY OF THE ORGANS OF GENERATION

THE OVARIES AND FALLOPIAN TUBES—THE UTERUS—LIGAMENTS AND APPENDAGES OF THE UTERUS—CHANGES IN THE UTERUS AT DIFFERENT STAGES—STRUCTURE OF THE UTERUS—THE VAGINA AND VULVA—DEVELOPMENT: COMPARISON OF THE GENITAL ECONOMY IN THE TWO SEXES—ANOMALIES.

BEFORE entering on the pathology of the uterus and ovaries, it is indispensable to know their anatomy and physiology thoroughly. This preliminary study is more necessary with regard to these organs than any others, because till within the last few years it has been very superficial. I do not refer merely to the organic structure of the uterus and its mucous membrane, to the histology of the ovaries, their functions, and all the points of anatomy and physiology relative to irritation, menstruation, conception, pregnancy, &c., on which light has only been thrown by modern investigations; but even the position, direction, volume, and mutual relationship of these organs, with the modifications which they undergo according to age and various circumstances, have been described in a most imperfect manner till quite recently. This is due to the fact that there are no other organs whose position, form, size and structure are so variable. Age, exercise or rest, menstruation or pregnancy, not to speak of various morbid conditions, modify the anatomical characters so much, that differences between writers are easily accounted for.

THE OVARIES AND FALLOPIAN TUBES

The *ovaries* and *Fallopian tubes* constitute the internal genital economy.

Ovaries.¹—The ovaries (*ovaria*) are the organs in which the ova, *i.e.* the female germs, are formed. The ovum is not complete till fecundation has taken place, *i.e.* the union of the female with the male germs produced by the testicles. Hence the name *testes muliebres* given to the ovaries, to recal the analogy existing between organs whose products have an analogous destination. The ovaries lie in the cavity of the pelvis, on each side of the uterus, in the posterior fold (*mesovarium*) of the broad ligament (Fig. 1); but this position is variable: at birth they are on a level with the iliac fossa, and only descend into the pelvis at the tenth year. These organs are very mobile, their position not being, so to speak, fixed. Certainly they are enclosed in the posterior fold of the broad ligament, behind the Fallopian tubes and in front of the rectum, from which they are usually separated by the inferior circumvolutions of the ileum; their superior surface corresponds with the central fold and with the intestinal circumvolutions; their inferior surface with the posterior surface of the broad ligaments and with the utero-sacral ligaments; their superior and posterior border is convex and free, and is in relationship with the small intestines. They are, however, at the same time so mobile that they may undergo all the displacements to which they are liable from the neighbouring organs, and which may be divided into four classes—1. Displacements owing to the laxity of the posterior fold, very limited, generally momentary; transverse and vertical. 2. Displacements due to the laxity of the broad ligaments, usually momentary, produced by fulness of the bladder, on which the ovaries rest, and which pushes them back above the utero-sacral ligaments. 3. Displacements caused by enlargement of the uterus, which drags the ovary successively from the pelvis into the hypogastric, the umbilical, the lumbar and, after delivery, into the iliac regions. 4. Lastly, accidental or morbid displacements, such as herniæ, which take place through the natural orifices or through lacerations.

The form of the ovary is that of an ovoid slightly flattened, presenting two surfaces (an antero-superior and a postero-inferior), two borders (the superior free, the inferior adherent), two extremities (one

¹ See Klebs, *Die Eierstockseier der Wirbelthiere*, in *Virchow's Archiv*, 1861, Bd. xxi, p. 362, and Bd. xxviii, p. 301. Schrön, *Beiträge zur Kenntniss zur Anatom. u. Physiol. der Eierstockes der Säugethiere* (*Zeitschr. von Siebold u. Kölliker*, Bd. xii, 1863, pp. 409 and 426). Grohe, *Ueber den Bau u. das Wachsthum des menschlichen Eierstockes u. ueber einige krankhafte Störungen derselben*, in *Virchow's Archiv*, 1863, Bd. xxvi, p. 271, and Bd. xxviii, p. 570. Pflüger, *Ueber die Eierstücke der Säugethiere u. des Menschen*. Leipsic, 1863. His, *Beobachtungen über den Bau des Säugethier-Eierstockes*, in *Schultze's Archiv für mikroskopische Anat.*, Bd. i. p. 151, 1865. Périer, *Anatomic et physiologie de l'ovaire*, thèse de concours pour l'agrégation. Paris, 1866. Puech, *Des ovaires, de leurs anomalies*. Paris, 1873.

internal, to which the utero-ovarian ligament is attached; the other external, to which the tubo-ovarian ligament is attached). The size varies, depending on age, menstruation, pregnancy and the menopause.¹ The weight during the intercalary period is on an average about a quarter of an ounce. The surface, at first smooth and polished, then vesicular and irregular, becomes after a time covered with cicatrices and finally shrivelled. The colour, rose pink in the child and red in the adult owing to vascular injection and sanguineous congestion at the monthly periods, becomes greyish or brown after the menopause.

According to numerous researches, the results of which are still incomplete, the ovary seems to be composed of two parts: one adherent, central, the hilum of the gland (*hilus ovarii*), which is spongy, erectile, and forms, so to speak, the bulb of the ovary (ovarian bulb, Rouget); the other cortical, superficial, free, peripheric, white in colour, the exclusive seat of the formation of the Graafian vesicles and of the ovules (see Figs. 3, 6, and 7). The central part, called medullary, of a dark red, is highly vascular, and furnished with muscular fibres. The ovarian or utero-ovarian artery, analogous to the spermatic, coming from the aorta, supplies the uterus as it passes along its border till it reaches the cervix, where it anastomoses with the uterine artery, a branch of the internal iliac. It gives off ten or twenty branches to the ovary on a level with the hilum, helicine arterioles like those of the cavernous bodies of the penis, a disposition which seems common to the erectile organs. The veins, much more numerous, constitute at first a wonderful venous network with muscular trabeculæ (Rouget), which rests on the subovarian plexus, a spongy body somewhat less than the bulb of the vestibule, which plexus communicates below with the vaginal plexus, above with the pampiniform plexus (more developed than in the male), to empty itself into the renal vein on the left and into the vena cava on the right; these veins are without valves, or at least have very insufficient ones. This association of vessels with fasciculi of smooth muscular fibres in which they are enfolded, and the trabeculæ of which in contracting prevent the return of the blood in the capillaries and little veins into the venous trunks, gives to the spongy portion of the ovary all the characters of an erectile organism. The same changes probably take place in the ovary during coitus as in the testicle; that is to say, it increases to double its size, becomes hard and extremely sensitive, and produces a considerable hyper-secretion. The lymphatics, described and drawn by His, are united into six or eight trunks, accompany the utero-ovarian artery, and empty themselves into the middle and superior lumbar lymphatic ganglia. The nerves issuing from the solar, renal and lumbo-aortic plexuses, form the ovarian plexus, and accompany the ovarian vessels.

The cortical glandular portion alone includes those numerous cells which do not, strictly speaking, constitute ova from the first, though they may become such by development.

¹ Size of the ovary in the adult during inter-menstruation { Transverse diameter, 0.038 m.
Vertical ditto 0.018 "
Antero-posterior 0.015 "

The ovarian vesicles, Graafian vesicles, ovisacs of Barry, which contain the ovum and expel it with their liquid contents at the moment of

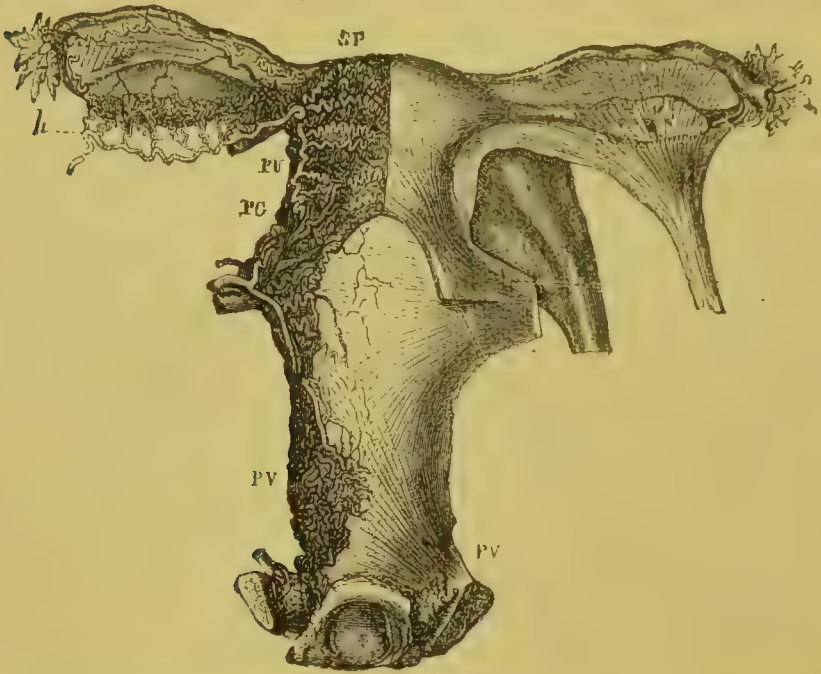


FIG. 2.—General view of the vascular supply of the internal genital organs. PV, semi-circular enlargement of the vaginal plexus; PC, cervico-uterine plexus; PU, uterine plexus; SP, helicine arteries of the body of the uterus; h, helicine arteries of the hilus of the ovary.

dehiscence, are developed on the cortical portion so early that they are seen in the foetus in such abundance that they may be said to be innumerable.¹ From this we may judge of the facility with which multilocular cysts are developed and of the early age at which they may be observed. It is only in proportion as they are developed that the ovarian vesicles project beyond the cortical substance of the ovary, forming on one side a projection on its free surface, and on the other penetrating more and more deeply into the bulbous portion, where they were erroneously supposed to take their origin. The ovisac is spherical, attaining a size of 15 millimetres or more in diameter; it hollows out for itself a cavity in the ovary, the wall of which has been mistaken for its supposed external membrane. Its proper envelope, semi-transparent, grey or reddish, resistant and capable of being enucleated from the ovary to which it is only attached by fibrous tissue and small vessels, is composed of laminar fibres or fibrous tissue, of fusiform bodies, of embryo-plastic nuclei, of amorphous granular matter, of cells peculiar

¹ Sappey, *Anat. Descriptive*, p. 631. Paris, 1864. Kölliker has counted more than 6000 on each ovary (*Mikroskop. Anat.* Leipzig, 1852).

to the ovisac, and of abundant capillaries.¹ The ovisac is supplied with blood by two or four arterioles, which spread over its surface in a delicate network. The *membrana granulosa* or epithelium of the ovisac, formed of one or more layers of hemispherical cells, has a thickness of from 1 to 2 hundredths of a millimetre, except at one point where there is a thickness of 60 hundredths of a millimetre and which has received the name of *cumulus* or *discus proligerus*, because it bears the germ.

The ovum² lies in the centre of the cumulus and according to the

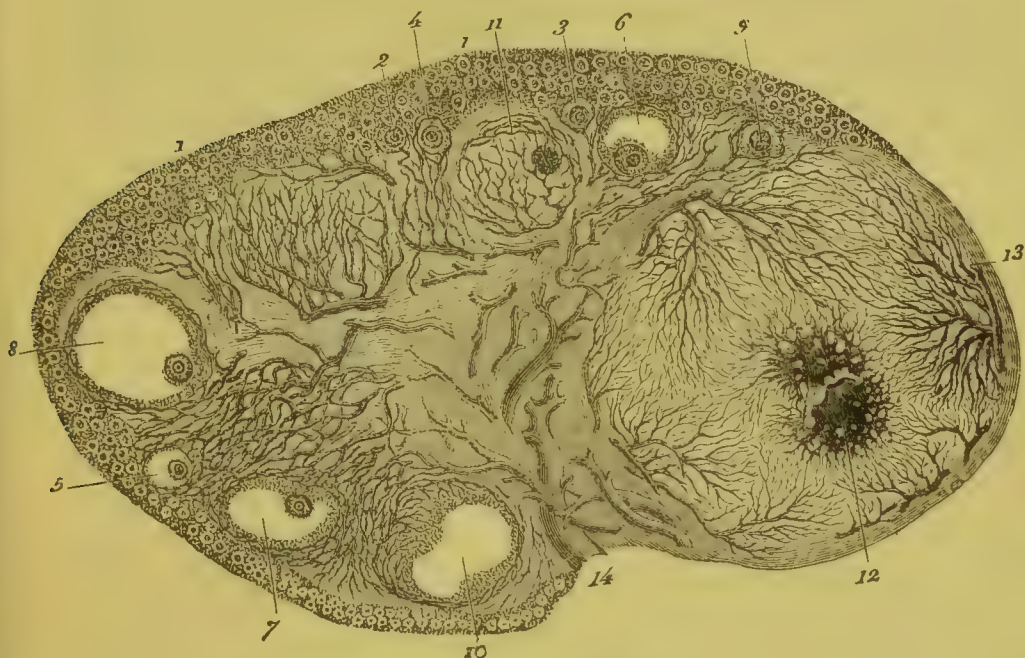


FIG. 3.—Vertical section of the ovary of the cat during gestation. Injected. Magnified 60 diameters. 1, cells of the non-vascular cortical layer; 2, cortical cells presenting the first rudiment of the *membrana germinativa*, and the first trace of a vascular circle; 3, commencing enlargement of follicle, separation of the *membrana germinativa* of the ovum, and continuation of this membrane into the adjoining portion of the follicle; 4, formation of proligerous disc. Vascular network of follicle; 5 to 8, follicles at various periods of development; 9, small follicle from which the section has only removed a disc from the zona pellucida of the ovum; 10, half-opened follicle, the ovum of which has escaped by the section; 11, intact portion of the follicular wall, through which the zona pellucida is seen; 12, central vein of corpus luteum; 13, peripheric artery of corpus luteum: the branches of this artery surround the polygonal cells of the corpus luteum; 14, large vessels of ovarian stroma (after Schröen).

¹ Courty, *De l'œuf et de son développement*, p. 55. Montpellier, 1845. Robin, *Mémoire sur les modifications de la muqueuse utérine*, p. 160.

² I prefer this name to that of ovule for designating the female germ; the latter gives a false idea, since Baer, who invented it, meant it to convey a distinction as incorrect as subtle between the ovum of birds and that of the mammalia: the latter having, according to him, an ovum in an ovum, or an ovum raised to the second power. In both cases there is an ovum in question, which

observations of Schrœn, Robin, &c., at the nearest point to the arterioles which ramify in the Graafian vesicle.¹

The ovum is a spherical vesicle of from one to two tenths of a millimetre, with a very fragile envelope (*zona pellucida* of Baer or vitelline membrane of Costé) and granular contents (*germ* or *cicatricula* in birds), alone or surrounded by a more or less considerable quantity of vitellus, presenting in its centre the nucleus of the cell (germinal vesicle of Purkinje) and its nucleolus (germinal spot of Wagner), discovered by Coste in the germinal vesicle of the human ovum. Two ova may be found exceptionally in one ovisac (Baer, Bischoff, Bidder), and certain anomalies have been observed by Davaine² in birds. Under the influence of the ovarian congestion produced by the natural matu-

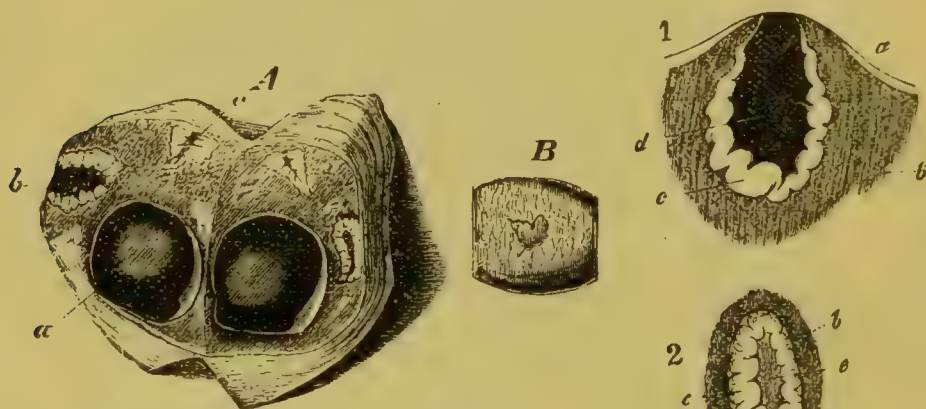


FIG. 4.



FIG. 5.

FIG. 4.—Formation of corpus luteum of the ovary (natural size). *A*, section of the ovary: *a*, recently emptied follicle filled with blood (thrombus of extravasation), surrounded by a thin yellow layer; *b*, empty follicle, puckered in front, with a smaller thrombus and a thicker wall; *c*, retrogressive metamorphosis in more advanced stage. *B*, exterior surface of the ovary and point where the recent rupture of the follicle has taken place; the thrombus projects outside.

FIG. 5.—Section of two corpora lutea of natural size. 1, in fresh condition, eight days after conception; 2, in the fifth month of pregnancy. *a*, *tunica albuginea*; *b*, stroma of ovary; *c*, fibrous membrane of follicle, thickened and puckered (internal layer); *d*, sanguineous clot within this membrane; *e*, discoloured clot; *f*, fibrous membrane, forming the boundary of the corpus luteum.

does not differ from the other as to the germ, and which is only distinguished by the quantity of nutritive matter added and by the shell which protects it.

¹ The ovum has often seemed to me to be placed in the superficial and prominent point of the vesicle, opposite the little vascular trunks which spread by irradiation over the ovisac. This is shown very clearly in the beautiful woodcuts which Gerbe has drawn so conscientiously for Coste's great work; I have not, however, prosecuted my researches on this point so far as to be able to affirm that it is always so.

² *Comptes rendus de la Société de biologie*. Paris, 1860.

ration of the vesicle and by the accompanying erectile phenomena manifested externally by menstruation, or under the influence of the congestion produced by sexual excitement, the quantity of fluid in the ovisac increases rapidly, stretches the walls, renders them thin, and gradually suspends the circulation in the part which is most superficial and least resistant. A kind of linear ulceration with rupture of the ovisac follows at this point: the ovum is expelled in the middle of the cumulus proligerus, and received by the fimbriated extremity of the Fallopian tube.

A work of reparation then commences in the tissue of the ovisac, passing through remarkable phases, and characterised by the persistence, during a longer or shorter period, of an organic production which gradually diminishes in volume, and which, on account of its colour, has received the name of yellow body, *corpus luteum* (Malpighi¹), or, as signifying more exactly the cicatricial act of which it is the indication, the more correct name of *ovariule* (Robin). This organic product is a hypertrophic thickening of the membrane of the ovisac, the cells of which multiply and increase in such enormous proportions as to cause a puckering of the membrane, and a considerable projection towards the surface of the ovary. These cells are simultaneously invaded by a granular product, of fatty nature and yellow colour, at least in woman, which is the real cause of the colour of the ovariole in the human species. In cystosarcomata of the ovary I have seen this product invade the membrane of several vesicular cysts, and give rise to considerable masses of yellow matter. Then comes the period of reabsorption; the yellow body atrophies and shrivels up so much that in its place there remains only a depressed cicatrix with the trace of the rupture of the ovisac and a grey or slaty coloration.

The development of the Graafian follicles and of the ova takes place in the ovary not only after puberty and during sexual activity but even before this period and during foetal life. In 1836 Carus announced that ova were to be found in the ovaries of the foetus. But the Graafian vesicles were considered to be independent of each other, and the ovary in consequence different from other glands. The recent researches of His and Pflüger prove that probably it is not so, and that the ovary resembles the testicle and other secreting organs.

In 1838 Valentin² announced that the ovary in embryos is canaliculated. In 1863 Pflüger demonstrated this tubular structure. Kölliker³ confirmed the fact by his researches on the embryos of cats, cows and women. In the ovaries of young embryos cordlike glandular filaments are certainly seen, sometimes in the form of a club with a blind end. They are composed of a superficial layer of little cells analogous to epithelium cells, precursors of the granular membrane of the Graafian follicle, and of a thick mass of larger cells which will become ova.

The development also takes place from the superficial part of this

¹ *Metovarium*, after the ovum (Raciborski).

² *Müller's Archiv*, 1838, p. 531.

³ *Handbuch Gewebelehre*, 5te Aufl, 1867. Leipzig.

gland, where it is least considerable, to the deep part, where it is most so. The transition of the glandular filaments containing ova into Graafian follicles or sacs takes place even in the embryo; it commences in the interior, and advances slowly to the surface, so that



FIG. 6.—Transverse section of the ovary of a human embryo at six months, magnified six diameters. *a*, external layer of glandular substance, with glandular filaments cleaned by means of a brush; *b*, internal layer of the same substance, with ovisacs separated or in course of isolation; *c*, stroma of the hilus (medullary substance); *d*, mesovarium, divided near the broad ligament (after His).

whilst the medullary portion increases, the tolerably thick glandular or cortical portion presents an inferior zone of follicles, separated or in process of separation. The separation of follicles is effected by the production of fibrous tissue forming partitions, and by that of new cells of epithelium lining them. The multiplication of these partitions divides the entire tube into isolated sections, each smaller than the preceding, and each containing only one ovum enveloped in a layer of epithelium. In proportion as the follicle increases in size it becomes filled with fluid, and the granular membrane, with its proligerous disc containing the ovum, remains against the wall. The vascular wealth of the ovary in the fœtus is remarkable, and is proportioned to the importance of the formation of this multitude of ovigenic or proligerous cells. In after life there are probably periods when physiological impulses of normal fluxionary movements singularly accelerate the evolution of ova. Thus at birth it is probable, as Rouget has affirmed and as the secretion of milk which occurs so frequently at that time would seem to indicate, that a hypertrophic ovarian congestion takes place, as if there were a general impulse towards the development of the whole being. A similar impulse, the most remarkable of all, occurs at puberty. Movements of less importance take place at each monthly period. They cease entirely after the menopause when the organ atrophies. This retrogressive atrophy makes

great progress in old age. Measurements of the ovary, taken by Puech at different ages, confirm the variations in the size of this organ in these various circumstances.



FIG. 7.—Elementary structure of the ovary in the human embryo.—A, in the embryo of six months, magnified 400 diameters. 1, two ova surrounded by an epithelial layer, one of them presents a prolongation by which it was probably united to another ovum as in Fig. 2, which represents two ova united by a cord of protoplasm (primitive ova) with their epithelium; 3, primitive ovum with two nuclei (germinal vesicles). B, in an embryo of seven months, magnified 400 diameters. 1, superficial layers of the ovary with voluminous glandular tubes, composed each of an epithelial layer and of a mass of ova, those nearest the surface being smaller than those deeply situated in the glandular substance of the organ; 2, ovigenic sacs of the deep layer of the glandular substance at the time of separation, two little sacs are represented completely isolated, and two others (glandular tubes) each containing two ova (after Kölliker).

The differences in the aspect of the ovary at various epochs of life are due to the different phenomena which characterise the normal evolution of the Graafian vesicles. The imperfection of this evolution before puberty, the frequency of this development and the almost periodical ruptures during the age of sexual activity, the atrophy and disappearance after the menopause, give to the surface of the ovary, during the successive ages of embryo life, childhood, youth, maturity, and old age, various aspects; at first it is elongated, then ovoid, smooth, or indented, with mingled projections and cicatrices, dotted with circumscribed spots of various colours—white, blue, or yellow—till finally it has the appearance of a wrinkled, shrunken, shrivelled membrane.

It will readily be perceived, by the size, length, and tongue-like shape of the ovaries in the embryo (Fig. 8), by their diminu-



FIG. 8.—The uterus and its appendages, and their relations with the neighbouring organs, at the end of the fifth month or beginning of the sixth, natural size. External view: 1, bladder, urachus, and umbilical arteries; 2, uterus; 3, rectum; 4, ovary, relatively very large, almost as long as the Fallopian tube; 5, Fallopian tube, the broad portion of which is prominent from early life; 6, round ligament. Owing to the defective development of the pelvis at this age these organs are situated above the brim in place of being contained in the pelvic cavity. Cavities: 1, bladder; 2, uterus, on the anterior surface of which the trunk of the *arbor vitæ* is seen extending to the fundus; the isthmus, which ought to separate the cavity of the body from that of the cervix, cannot be distinguished; 3, vaginal orifice of the uterus; 4, vagina, the folds of which are well marked; 5, posterior surface of the uterus; 6, rectum; 7, ovary; 8, Fallopian tube; 9, pubic symphysis; 10, labia minora and majora; 11, vaginal orifice; 12, anus.



FIG. 9.—Ovary and fimbriated extremity of Fallopian tube in a woman who died during menstruation (after Farre *ad nat.*) l, broad ligament; o, ovary; r, r, old *yellow bodies*, remains of Graafian follicles ruptured and cicatrised; f, broad portion of the Fallopian tube; i, fimbriated extremity applied to the ovary.

tive size and their slightly flattened form in the child, by their increased size, ovoid appearance, and the formation of globular projections on their surface at puberty (Figs. 1, 13, 14), in the adult during menstruation (Fig. 9) and in the pregnant woman (Fig. 10), by the return to smaller dimensions at the period of the menopause (Fig. 11), and, lastly, by their complete atrophy in old age (Fig. 12), that these organs, originating in little bands along the inner borders of



FIG. 10.—Ovary during pregnancy, and external view of *yellow body* (*corpus luteum*) (after Coste).

the Wolffian bodies, hollowed out after the manner of blind tubes like the testicles, becoming later on vesicular by the occlusion and the

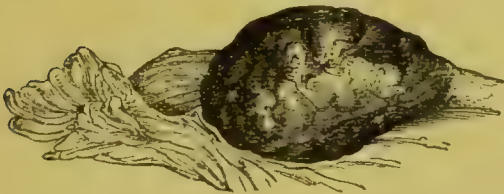


FIG. 11.—Ovary at the menopause.

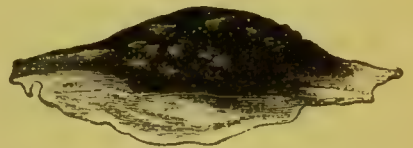


FIG. 12.—Ovary in old age.

partitioning of these tubes, are congested and hypertrophied during the whole period of maturation of the ova and of sexual activity, to be reduced to a kind of shell or shrivelled, shrunken web after the extinction of the reproductive faculty.

Fallopian tubes.—Contained in the central fold, the tubes may undergo displacements analogous to those of the ovaries. Passing off from the uterus in a transverse direction, each tube describes in its external half a curve, the concavity of which looks backwards, inwards, and downwards, and by its terminal swelling it turns towards the ovary. Its axis, though straight near the uterus, before long presents flexuosities recalling those of the *vas deferens* at its origin. Its medium length is 12 centimetres. Its diameter increases with its distance from the uterus: it is hardly more than 15-tenths of a millimetre at the opening and in the thickness of the uterine walls, whilst it is 4 millimetres near the uterus, from 5 to 6 at the central part, from

7 to 8 at its external extremity, and from 18 to 20 at the circumference of the terminal infundibulum. Therefore, even supposing the diameter of the uterine orifice to be enlarged, it is not the less impossible to catheterise the Fallopian tube. There is not, however, the same difficulty about the penetration of liquids that there is about solids, therefore an injection may penetrate from the uterine cavity into the Fallopian tube. The external orifice, *ostium abdominale*, opens in the

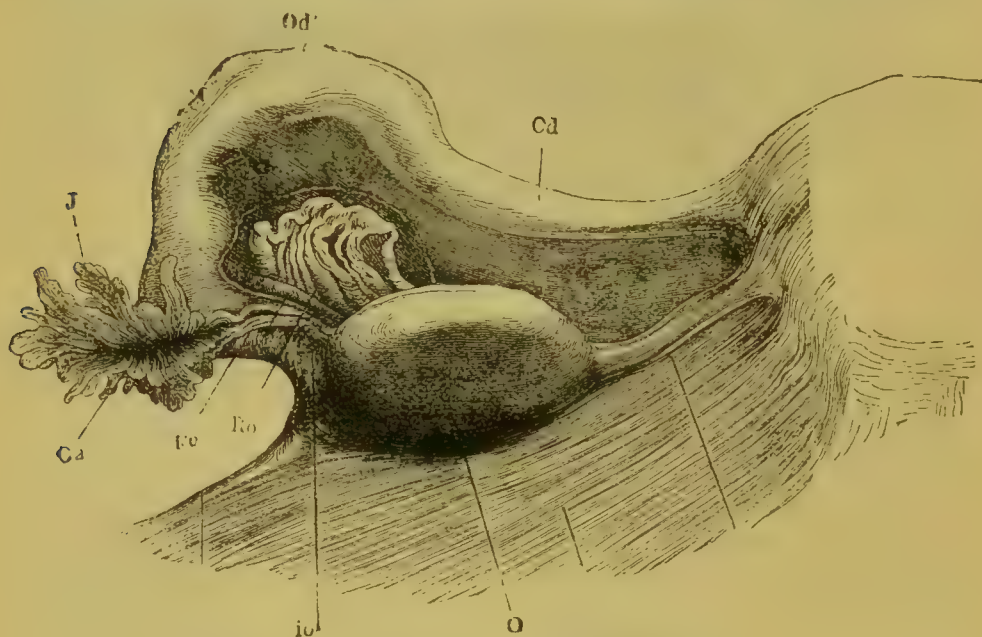


FIG. 13.—Fallopian tube and ovary. O, ovary turned downwards and backwards; Od, isthmus of the tube; Od', broadest part of this canal; J, fimbriated extremity; Oa, abdominal orifice of the tube, Fo, ovarian fringe; io, infundibulo-ovarian ligament; Ro, organ of Rosenmüller.

centre of a kind of fringed funnel, called the *fimbriated extremity*. It is not uncommon to observe accessory fimbriated extremities on the external third of the Fallopian tube, *i. e.* other orifices besides the normal one, communicating, like it, with the canal of the oviduct, and forming consequently a condition unfavorable to the preservation and transport of the fecundated ovum, and therefore a cause of sterility.¹

The Fallopian tube is composed of a double muscular tunic, the internal of circular, the external of longitudinal fibres, following all its flexuosities, and apparently formed by a prolongation of the uterine fibres. These are the cause of the vermicular, peristaltic movements, analogous in every way to those of the intestine, which it is easy to see in the females of the mammalia at the time of ovulation. Besides these intrinsic muscles, the Fallopian tube is surrounded by an extrinsic superficial layer of muscular bundles, which do not follow the flexuosities of this canal, but run in a perfectly straight direction, are continuous with those of the utero-ovarian and tubo-ovarian liga-

¹ Richard, *Anatomie des trompes de l'utérus*, Thèses de Paris, 1851.

ments, as well as with those of the hilus of the ovary, determine the adaptation of the fimbriated extremity to this latter organ, and form part of the general system of the extrinsic muscular envelope common to the uterus and its appendages which will be described hereafter.



FIG. 14.—Section of right Fallopian tube in an adult nullipara (after Richard). *a*, uterine orifice of the tube; *b*, narrowest part of the canal, corresponding to the uterine end of the tube; *c*, canal in the body of the tube, origin of the large folds continuing into the fimbriated extremity; *d*, opened fimbriated extremity filled with folds, which are continuous with those of the canal of the tube; *e*, tubo-ovarian fringe and furrow of the same name; *f*, ovary; *g*, round ligament.

The internal membrane of the Fallopian tube is a mucous membrane furnished with very remarkable longitudinal folds, most marked in the centre, but equally distinct at the two ends, on the one side on the internal surface of the fimbriated extremity, on the other in the uterus at each of the superior angles. Henning has found in the tubal mucous membrane glands which are short, bursiform, simple, or dichotomous; some present a swelling in the form of a cluster, others show circumvolutions analogous to those of the intestine and sudoriparous glands, and are arranged parallel to the mucous membrane. They are especially numerous on a level with the abdominal extremity. The epithelium of this mucous membrane is vibratile, the cilia moving from the ovary towards the uterus.

The Fallopian tubes have a double action to fulfil: on the one hand they convey the spermatozoa to the ovule to be fecundated, and on the other hand they transmit this ovule to the uterus, where it ought normally to be developed. We may presume that the transport of the ovule is effected in part by the vibratile cilia of the tubal mucous membrane.

THE UTERUS

The uterus is a hollow organ designed for gestation. In *shape* it is like a cone flattened from before backwards, having, consequently, two surfaces (one anterior and one posterior) and lateral borders. The base or fundus is above, the apex below. The flattening is not equal on the two surfaces; the anterior alone is almost flat, the poste-

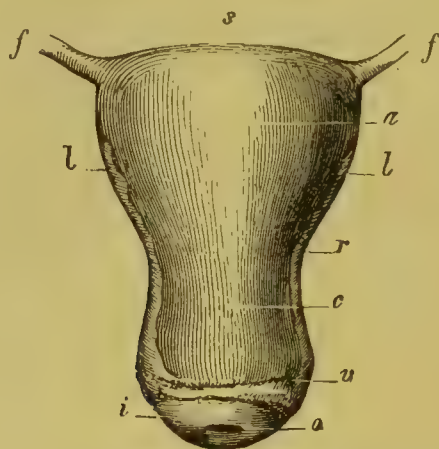


FIG. 15.—Uterus of an adult nullipara (posterior surface). *a*, body of the uterus; *c*, cervix; *r*, isthmus or contraction indicating the junction of the body with the cervix; *s*, fundus; *ll*, lateral borders; *ff*, Fallopian tubes; *v*, insertion of vagina; *i*, vaginal portion of cervix; *o*, external orifice.

rior is convex, and, as it were, divided into two parts by a projection running the whole length of the median line. The *isthmus*, a slight annular depression situated on the surface of the organ immediately below the middle, more marked before and on the sides than behind, is the external vestige of its division into two unequal parts, an upper one, the *body*, larger and cone shaped, a lower one, the *neck*, cylindrical and slightly swollen in the middle.

Volume.—If we take into account neither individual varieties nor functional variations the following are the dimensions in round numbers:

Length	0·060 m. to 0·070 m.
Breadth	0·035 „ to 0·045 „
Thickness	0·020 „ to 0·025 „

I may mention that the length may reach 80 millimetres without the existence of any morbid condition; that the breadth from one Fallopian tube to the other is the most difficult to determine either in the patient or on the cadaver, whilst the thickness, or the antero-posterior diameter, measured at its culminating point, is normally the least variable and the one in which it is easiest to discover pathological changes.

Weight.—The weight of the uterus is on an average an ounce and a half, but it varies, as do also the form and the size in different physiological conditions of the organ.

Direction.—The vulva is almost in the plane of the inferior strait, projecting a little beyond it below. The vagina commences by being in the same axis, but as it rises it has a tendency to follow the curve of the sacrum; as for the uterus, it is in the axis of the superior strait, by which it is evident that it forms a continuation of the vagina by making an angle at the point of union of the two organs. The axes, even of the body and neck of the uterus, are not absolutely the same, the neck following slightly the curve of the sacrum, or the axis of the

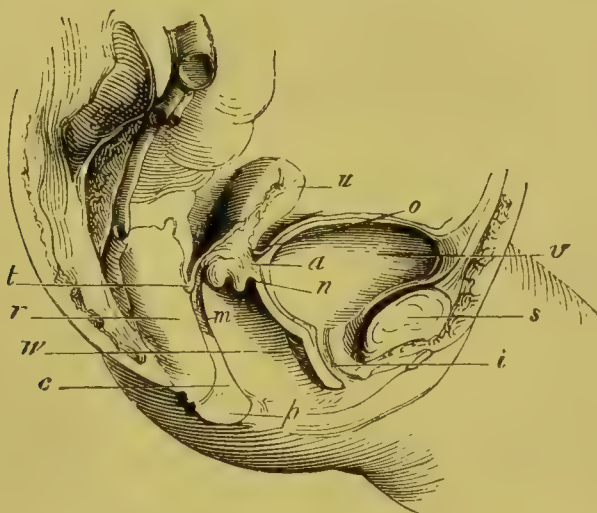


FIG. 16.—Central vertical section showing the direction of the uterus and chief relations of this organ. *u*, uterus; *w*, vagina opened; *v*, the bladder opened; *i*, urethra opened; *r*, rectum opened; *o*, anterior peritoneal or utero-vesical *cul-de-sac*; *t*, posterior peritoneal or utero-vagino-rectal *cul-de-sac*. It is easily seen that these *culs-de-sacs* are situated on very different levels. *n*, connection of the vagina with the uterus and utero-vaginal circular *cul-de-sac*; *a*, connection of the bladder with the uterus; *c*, recto-vaginal septum, thin above, *m*, where the walls of the vagina and rectum are almost contiguous, thick below at *p*, where it forms the perineum; *s*, left half of the symphysis pubis.

pelvis proper passing in front of the vagina, the body inclining a little forwards, so that its fundus looks towards the anterior abdominal wall and its axis is perpendicular to the level of the brim. There is in fact normally, as a rule, a slight anteversion, and even anteflexion, the uterus having a tendency to fall forwards rather than backwards. The fundus of the uterus generally inclines to the right, especially during pregnancy. Is this owing to the sigmoid flexure being to the left? Mauriceau and Freund think that the relative shortness of the right appendages is the effect and not the cause of this inclination, which is congenital.

Relations.—The uterus is situated in the pelvis behind the bladder. The body is free and smooth, and covered in front by the peritoneum,

which adheres closely to it in the upper part, less so below, and on a level with the isthmus is reflected on the posterior surface of the bladder. This vesico-uterine *cul-de-sac* is situated high up in the child, lower in the adult, and low down in the multipara and in the old woman, owing to the differences which age and parturition cause in the relative proportions of the body and neck. It may vary to a certain extent independently of these conditions; as a rule, however, it corresponds with the isthmus. Below this point the anterior surface of the cervix is in immediate contact with the lower and posterior part of the bladder, to which it is attached by cellular tissue. The bladder adheres to the cervix for a length of 14 millimetres. It is adherent to the vagina by all the surface corresponding to the vesical trigone, and by a portion of the vesical walls beyond the trigone, *i. e.* by almost the whole of its fundus, and by all the breadth of the anterior vaginal wall, a space almost quadrilateral in form and extending from 27 to 30 millimetres in every direction (Fig. 18 *b, b*).

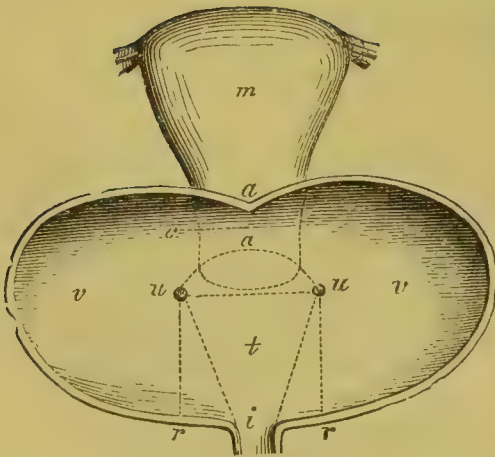


FIG. 17.



FIG. 18.

FIG. 17.—Exact relations of the bladder with the uterus and vagina (after Dubois). *m*, uterus; *c*, cervix; *u, u*, ureters; *t*, trigone of bladder; *a, a*, line of connection between the bladder and cervix; the quadrilateral space enclosed in the dotted lines, *r, u, u, r*, including the trigone, represents the surface of attachment of the bladder to the vagina.

FIG. 18.—Vertical antero-posterior section of the uterus. *i*, isthmus separating the cavity of the body from that of the cervix; *a*, anterior lip of the cervix; *p*, posterior lip; *f*, posterior vagino-uterine *cul-de-sac*; *va, va*, vagina; *b, b*, connections of the urinary bladder with the anterior surface of the cervix; *r*, reflexion of the peritoneum from the posterior surface of the uterus and vagina to the rectum; *c*, commencement of the utero-lumbar suspensory ligaments.

The result of a great number of measurements taken at all ages, both in the state of vacuity and of gestation, is that the distance between the opening of the ureter at the posterior angle of the trigone and the insertion of the vagina at the cervix, while very variable, is on an average from 1 to 2 centimetres. The distance between this opening and the free portion of the cervix is still more variable as it depends on the size and length of the cervix. The distance between the ureter and the margin of the uterus is equally variable, since the ureter is sometimes at some distance from it, whilst in other circumstances, as at the end of gestation, it is in immediate contact with the uterine border, as shown by the fact that the ureter and uterus may be torn or ulcerated at the same point, as occurred in a case of fistula after delivery which came under my own observation. When the bladder is empty the anterior surface of the uterus is bent over it, forming a slight curve with the concavity looking forwards and downwards. When it fills, this surface rises and is directed in turn forwards and upwards. When it is distended the uterus may be compressed by it against the sacro-vertebral angle, or if the ligaments are relaxed may even be turned backwards, its base looking towards the concavity of the sacrum, and may become fixed in this position when such a displacement occurs at the commencement of pregnancy or after delivery.¹ The posterior surface of the uterus is covered in all its extent by the peritoneum, which, as it passes over the utero-sacral ligaments, forms at the sides Douglas's folds, whilst in the middle line it extends to the upper part of the posterior vaginal wall to form, by its reflection on to the rectum, the recto-vaginal *cul de-sac* (Fig. 18 r). The posterior surface assumes alternate positions exactly the reverse of the anterior surface, according as the bladder is full or empty. It looks towards the rectum, being generally separated from it by circumvolutions of the small intestine, though exceptionally it may rest upon it when raised and pushed towards it by the distension of the bladder or by one of the pathological conditions which will occupy our attention when studying displacements of the womb.

The upper margin is in relation with the circumvolutions of the small intestine, of which it somewhat retains the impression. In the majority of women it does not reach the level of the brim (Sappey). However it extends beyond the horizontal plane, passing immediately above the symphysis of the pubis, which allows of its being examined by palpation in the greater number of patients.

The lateral borders correspond with the interstices of the two peritoneal folds, anterior and posterior, which, as they leave the uterus, form the broad ligaments. They are continuous with those of the vagina. Both are in immediate relation with the numerous vessels which enter these two organs. The lower extremity projects into the cavity of the vagina, which encircles it. It is a little lower before than behind, and the posterior utero-vaginal *cul-de-sac* has in consequence a greater depth than the anterior one (Fig. 18).

¹ Sappey, *Anat. descript.*, t. iii, p. 661. Paris, 1864; Comte, *Bulletin de la Société anatomique*, 1826, t. i, p. 49.

This extremity, often incorrectly designated as the neck, is the vaginal portion of the neck (Fig. 15). Normally it looks downwards and backwards, and this direction may be exaggerated to such an extent that the axis of the neck may form a right angle with the vagina, its vaginal portion resting on the posterior wall of this membranous canal. Sometimes it hardly projects; at other times it does so considerably; on an average it is from 10 to 12 millimetres long. Its slightly rounded form may be flattened, or, on the contrary, be elongated till it becomes conical.

A transverse orifice divides it into two lips, united right and left by thick commissures. The projection and size of these lips are unequal. The anterior is the more prominent, the lower and the easier to find, owing to the cervix being directed backwards; the posterior, however, has a larger surface on account of the vaginal insertion being higher behind than before. This circumstance, added to the difference in length of the two walls of the vagina (the posterior being the longer), should remind us to pass the finger or sound along the posterior wall in order to make sure of reaching the cervix (Fig. 18).

LIGAMENTS AND APPENDAGES OF THE UTERUS

The study of these ligaments is very important from a double point of view, whether we consider them as a means of suspension of the uterus, or whether we study the consequences resulting from the partitioning produced by their presence in the pelvic excavation.

I. *Means of suspension*.—They are of two kinds: some suspend the uterus by its fundus and by its sides, others by its neck.¹

The former are the broad ligaments and the round ligaments; the latter are the utero-sacral ligaments and the suspensory ring.

A. 1. The broad ligaments are the two lateral parts of the double peritoneal fold which, continued from the bladder to the uterus to be reflected afterwards from the uterus to the rectum, contains within its folds the uterus in the centre with its appendages on either side and divides the pelvis into two unequal parts, the one anterior, vesical, the other posterior, recto-intestinal. Commencing from the lateral margins of the uterus, they become continuous with the peritoneum which covers the brim and pelvic cavity, and are reflected below before touching the floor of the pelvis, the anterior fold towards the bladder, the posterior lower down on to the utero-sacral ligaments, whilst above they are subdivided into three secondary folds, the anterior containing the round ligament, the middle the Fallopian tube, and the posterior the ovary and its ligament (Figs. 1, 20). They are not formed merely by a fold of peritoneum, for this serous membrane is lined throughout their whole extent with a muscular layer, to which I shall call atten-

¹ See Fig. 20, p. 22, where these ligaments are represented in a newly born child, seen from before; and Fig. 1, *front*, where they are seen from behind in an adult.

tion in describing the contractile organs of the uterus. Apart, however, from their contractility they may be said to contribute in main-

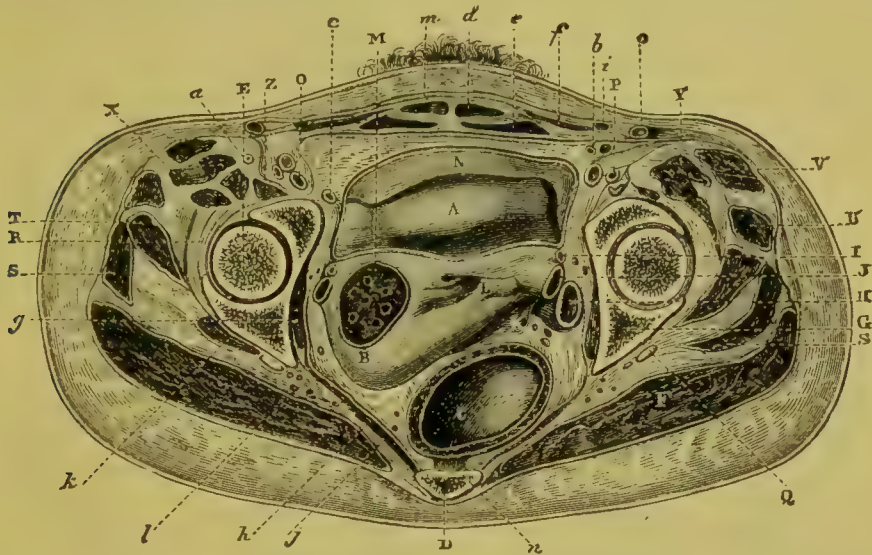


FIG. 19.—Horizontal section of the pelvis of a woman, aged twenty (after Le Gendre). The section, which is made at 1 cm. above the pubis, passes through the ilium about the middle of the coxo-femoral articulation, on a level with the upper borders of the bladder and uterus, the fundus of the latter being divided. The bladder is but slightly distended, the rectum is pushed a little to the right of the sacrum and enveloped by the peritoneum, except the portion which is adherent to this bone. The uterus on its posterior surface is in contact with the bladder. It presents a deviation from its normal position, as is often observed on the cadaver. The fundus, which is strongly inclined to the left instead of to the right as is usual, fits into the cotyloid cavity of the same side; the deviation is such that the body of the uterus occupies all the left side of the true pelvis. Besides this lateral deviation there is a considerable ante-flexion of the body. The distance which separates the anterior surface of the uterus from the abdominal wall is about 7 cm. In the right side of the pelvic cavity are seen the uterine appendages in their normal order of superposition; the round ligament with the Fallopian tube below, and quite behind and to the outer side the ovary. N, peritoneum; A, upper border of the bladder; B, angle of union of the fundus with the neck of the uterus; M, fundus of the uterus, divided; H, right ovary; I, round ligament; J, Fallopian tube; L, broad ligament of the right side; K, fibrous tissue between the rectum and fundus uteri; C, rectum; N, mesorectum; D, sacrum; E, head of the femur; G, cotyloid cavity; R, fibrous capsule of the coxo-femoral articulation; O, femoral vein; P, femoral artery; a, crural nerve; b, epigastric artery and vein; c, c, lymphatic ganglia; i, inguinal canal; Q, sciatic nerve; l, gluteal vessels; R, gluteus maximus; s, s, gluteus medius; T, gluteus minimus; U, V, X, Y, Z, fascia lata, sartorius, right rectus, iliacus and psoas muscles; d, pyramidalis muscle; e, rectus abdominis muscle; f, internal oblique muscle; g, obturator internus muscle; h, levator ani muscle; j, sacro-sciatic ligament; k, superior gemellus muscle; m, aponeurosis of the external oblique muscle.

taining the uterus in position; when they are cut in the dead body the uterus is seen to obey the laws of gravity, and to incline to the side towards which the pelvis inclines, whilst it reassumes its proper

place as soon as their continuity is once more effected by means of a

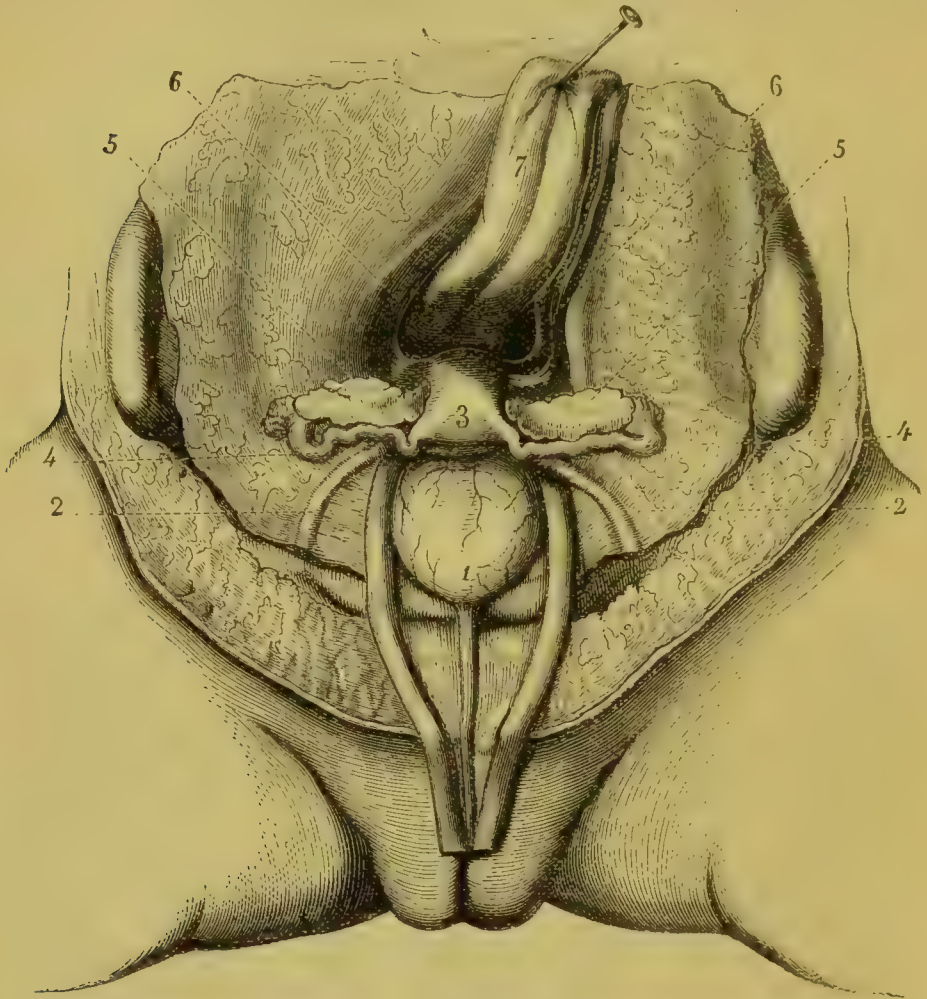


FIG. 20.—General view of the internal genital organs of a child at birth. 1, bladder with the urachus above and on each side the umbilical arteries; 2, 2, round ligaments; 3, body of the uterus bent forwards; 4, 4, Fallopian tubes; 5, 5, ovaries, above which is seen on each side an ascending longitudinal projection of peritoneum, near Douglas's fold, formed by the ovarian vessels and the superior round ligament, which raises the serous membrane; 6, 6, Douglas's peritoneal folds covering the utero-lumbar ligaments; 7, rectum. This woodcut is intended to show all the means of suspension of the uterus, including the broad ligaments and the superficial muscular layer lining them, a common envelope embracing the womb and its appendages, and connecting them simultaneously with the anterior, posterior, and lateral portions of the pelvis. It shows at the same time the position and form of these organs peculiar to the foetus and infant.

suture.¹ Repeated pregnancies, together with other causes, produce considerable relaxation in these organs.

2. The round ligaments, originating in smooth muscular fibres from the whole extent of the sides of the womb, and especially from its

¹ Sappey, *Traité d'anatomie*, t. iii, p. 651. Paris, 1864.

upper half, pass off from its lateral angles or from the extremities of the fundus in front of and a little below the Fallopian tubes, are enveloped on each side by the anterior fold of the broad ligament, reach, at their outer extremity, the brim of the pelvis, and from there, being deflected inwards, the abdominal orifice of the inguinal canal, having traversed which, they are inserted by some of their fibres into its inferior wall, by others into the spine of the pubis, and by others, again, into the upper part of the labia majora. They evidently contribute to maintain the fundus of the uterus in a forward position; if too short, they may determine anteversion or anteflexion; if too long, they let the uterus fall or become retroflexed; if unequal, they may favour lateral flexion (Fig. 20).

B. The means of suspension of the cervix are more certain and more resistant than those of the body. They consist of the posterior ligaments and the anterior adhesions of the uterus to the bladder.

1. The posterior ligaments arise from the sides of the posterior surface of the uterus at the union of the body and neck, or rather at the point where the vagina is inserted, and are formed of muscular fibres which are continuous with those of the organ itself and pass under the posterior layer of the broad ligament. Covered by the peritoneum, which being reflected from the broad ligament above them to descend from there into the utero-rectal *cul-de-sac* forms in this manner the fold of Douglas, they pass outwards to be inserted immediately to the inside of the sacro-iliac symphysis at the third sacral vertebra, and often above as far as the promontory or the anterior and lateral part of the last lumbar vertebra, which has led Huguier¹ to designate them as *utero-lumbar* in place of *utero-sacral ligaments*. It is these ligaments which prevent the cervix from descending, even in the majority of multiparæ, unless gentle but sustained traction is made on the two lips.

2. The anterior adhesions of the uterus to the bladder (Fig. 18) are not less important as means of suspension. These adhesions evidently prevent the cervix, if not from falling or from being dragged forwards towards the pubis in cases where the utero-sacral ligaments are relaxed or torn, at least from inclining backwards towards the sacrum; for even when the bladder is distended by urine, as its base is only moderately developed, the uterus, in place of being pushed back as a whole towards the sacrum, is raised, and its fundus which looked forwards is directed upwards and then backwards and sometimes even it may be completely retroverted towards the sacrum.

As the result of these two means of suspension (Douglas's ligaments embracing the posterior and upper part of the cervix, and the adhesions with the bladder the anterior and upper part) the cervix may be said to be suspended by *two half rings*; the one posterior, preventing it from inclining forwards and downwards; the other anterior, preventing it from inclining backwards, which complement each other and form a real *suspensory ring* which maintains the upper third of the cervix in a sufficiently fixed position in the pelvic cavity (Figs. 1,

¹ *Allongements hypertrophiques du col*, p. 80. Paris, 1859.

18). At the same time it results from the point of attachment of this double half ring that the free portion of the cervix below and the whole body above may oscillate and, under the influence of various kinds of pressure, incline in different directions without the portion of the cervix embraced by this ring leaving the centre of the pelvis. The uterus cannot descend unless the posterior half ring is relaxed; it cannot rise unless the anterior half ring is stretched; but it may oscillate in all directions round this double half ring as round a suspensory ring. We cannot judge better of the nature, direction and extent of these movements than by provoking them by means of the finger introduced into the vagina: in pushing the cervix backwards we perceive that the body is directed forwards; in pushing it to the right the fundus is directed to the left, and *vice versâ*; in other words, the fundus by a swinging motion is always directed in the opposite direction from the cervix.

II. *Division of the pelvic cavity.*—The ligaments are not less important as regards the divisions which they establish in the pelvic cavity than as means of suspension. The vast folds which have just been described under the name of broad ligaments divide the pelvis proper into two unequal compartments: the one anterior, occupied in great part by the bladder; the other posterior, containing the rectum and the utero-vagino-rectal cavity. So that whilst the uterus at the brim is connected with the bladder in front, behind it is separated from the rectum by a large cavity. This, which may be called the *utero-vagino-rectal cavity*, is very deep, especially in multiparæ. When no adhesion limits its extent, either from before backwards from the vagina to the rectum, or from one side to another between and below the folds of Douglas, this cavity may attain great dimensions; for the dimensions are those of the pelvic cavity itself, exclusive of the thickness of the rectum, vagina and bladder, which occupy very little space in a state of vacuity. I have often measured this cavity in various directions, the antero-posterior, and even the transverse diameter, may exceed eight centimetres if the folds of Douglas are stretched; if they are left in their natural position there may be a space of five or six centimetres between them; as to the depth of the cavity, from the upper border of the uterus to the bottom of the vagino-rectal *cul-de-sac* there is from fifteen to eighteen centimetres; taken below the utero-sacral ligaments it measures from five to nine centimetres. Into this cavity the small intestine may descend in a state of health, in various diseases the ovary may be dragged there by its own weight, and in extreme retroflexions the fundus of the uterus may fall even below the ligaments of Douglas; and lastly, it is there that sanguineous, serous and purulent effusions are formed, and that fibrous adhesions take place in hematoceles and retro-uterine peritonitis.

To the right and left of the bladder are superficial fossæ; to the right and left of the retro-uterine cavity, behind the ligaments of the ovary and above the folds of Douglas, are two deeper and more extensive fossæ, where tubo-ovarian and uterine adhesions are often formed after inflammations of the ovary and Fallopian tubes. Secondary longi-

tudinal fossæ, or rather grooves, separate the upper margins of the small folds and are also frequently the seat of inflammatory sero-purulent adhesions and effusions. It is useless to describe the relations of these peritoneal surfaces with the abdomino-pelvic viscera, or the

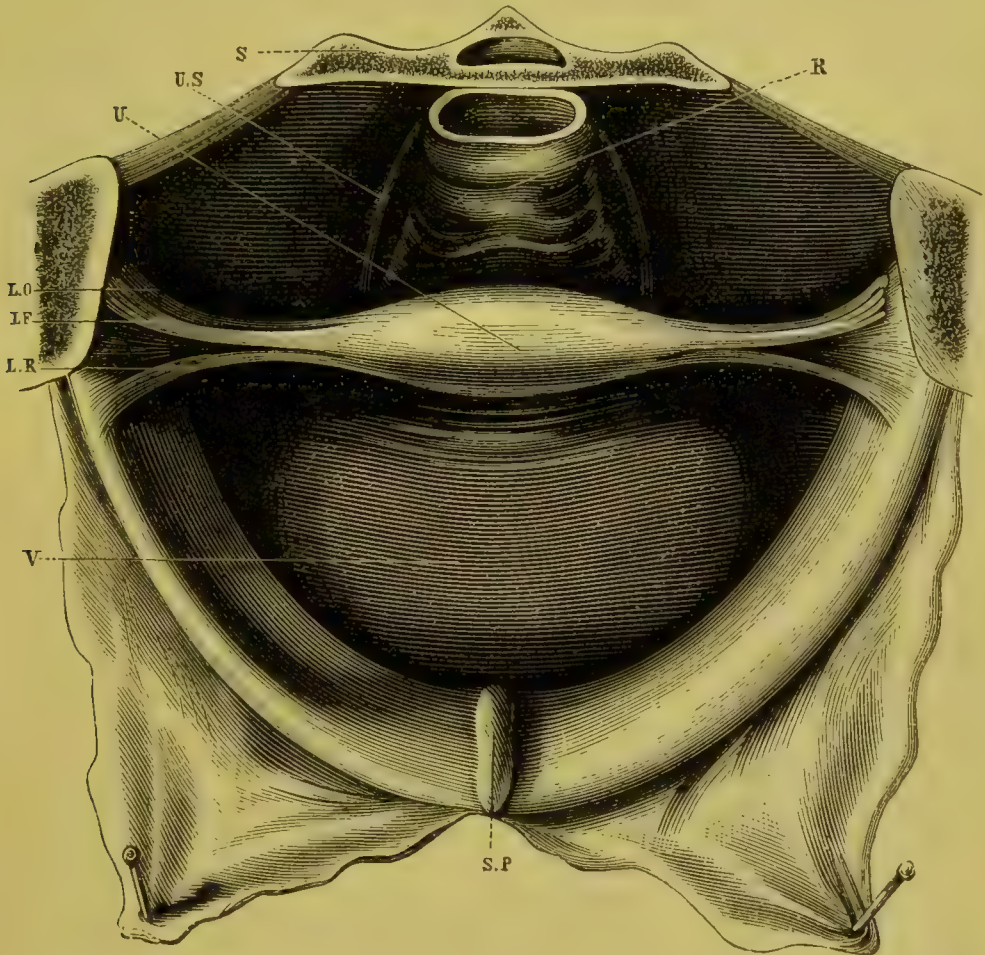


FIG. 21.—Relations of the viscera contained in the female pelvic cavity (after Tillaux). L F, ligament of the Fallopian tube; L O, ligament of the ovary; L R, round ligament; R, rectum; S, sacrum; S P, symphysis pubis; U, uterus; U S, utero-sacral ligament; V, bladder.

continuity of this peritoneal covering with that of the iliac fossa, Fallopian ligament, &c. It is important, however, to remember them in order to account for the extension of inflammation to various points not only of the retro-uterine peritoneal cavity but also of the iliac and hypogastric portions of the peritoneum, which may be affected by suppuration, or may give rise to a purulent collection contained within septa of new formation. It is also important to remember that these broad ligaments contain a more or less abundant and dense cellular tissue within their folds in addition to the muscular tissue lining them.

Their two smooth surfaces are in relation, the anterior with the

bladder, the posterior with the rectum; it is at right angles from the latter that the two folds of Douglas arise, which cover the utero-sacral ligaments. There are four borders—superior, inferior, internal, and external. The superior is subdivided into three small folds. The inferior is in relation with the subperitoneal cellular tissue of the pelvis and

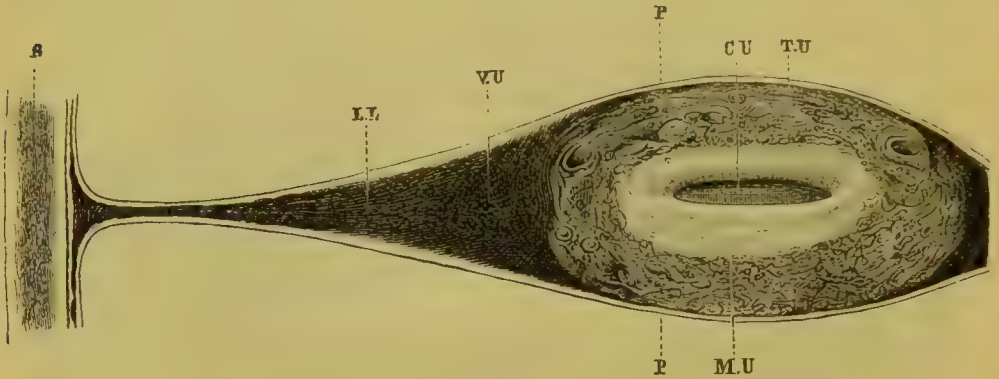


FIG. 22.—Section of the uterus and broad ligaments perpendicular to the large axis of the womb at 2 centimetres from its base (after Tillaux). B, pelvic wall; CU, uterine cavity; LL, broad ligament; MU, uterine mucous membrane; P, P, peritoneum; TU, uterine tissue; VU, utero-ovarian veins.

with the superior perineal aponeurosis. The internal is very wide (Fig. 22), the two folds being separated from each other by the thickness of the uterus; it is in relation with the uterine artery and the utero-ovarian plexuses, venous and lymphatic; it is continuous with the inferior border on the lateral portions of the vagina (Fig. 23, L S P), having the same relations with the veins and lymphatics, and allowing of the recognition by vaginal touch of phlebitis, lymphangitis, tumours and purulent collections formed in this ligament. The external is in relation with the walls of the cavity; it is very thin, the two folds of peritoneum being in close proximity; a horizontal section of the broad ligaments and of the uterus at about an inch from its base shows very clearly the difference in thickness of the two borders (Fig. 22).

The cellular tissue with which this vast peritoneal fold is lined is loose and abundant, especially below where it is continuous with the cellular tissue covering the upper perineal aponeuroses and levator ani (Fig. 23) and with that which covers the lateral surfaces of the bladder, the peritoneal lining of the abdominal wall at the hypogastrium and of the internal iliac fossa. Consequently an inflammation of the broad ligament may be propagated in any of these various regions, or an abscess of this ligament may open into the vagina, bladder, rectum, into the ischio-rectal fossa, at the top of the sacro-sciatic groove, or may appear at the hip with the sacral plexus and the sciatic nerve or may reach the abdominal wall on a level with the Fallopian ligament, above or below the crural arch or even at the obturator foramen. Pelvi-peritonitis is most frequently posterior (retro-uterine cavity); it may be anterior or it may surround the uterus on all sides

rising to a greater or less height, to the brim or even above the cavity, according to the height of the adhesions or new membranes which limit it, and may open into the rectum, into a part of the intestine, the sigmoid flexure or even the cæcum, or at the abdominal wall above the crural arch, on a level with the hernial fossæ. Abscess of the broad ligament is lateral, on one or other side of the uterus and vagina, pushing back these organs towards the opposite side without

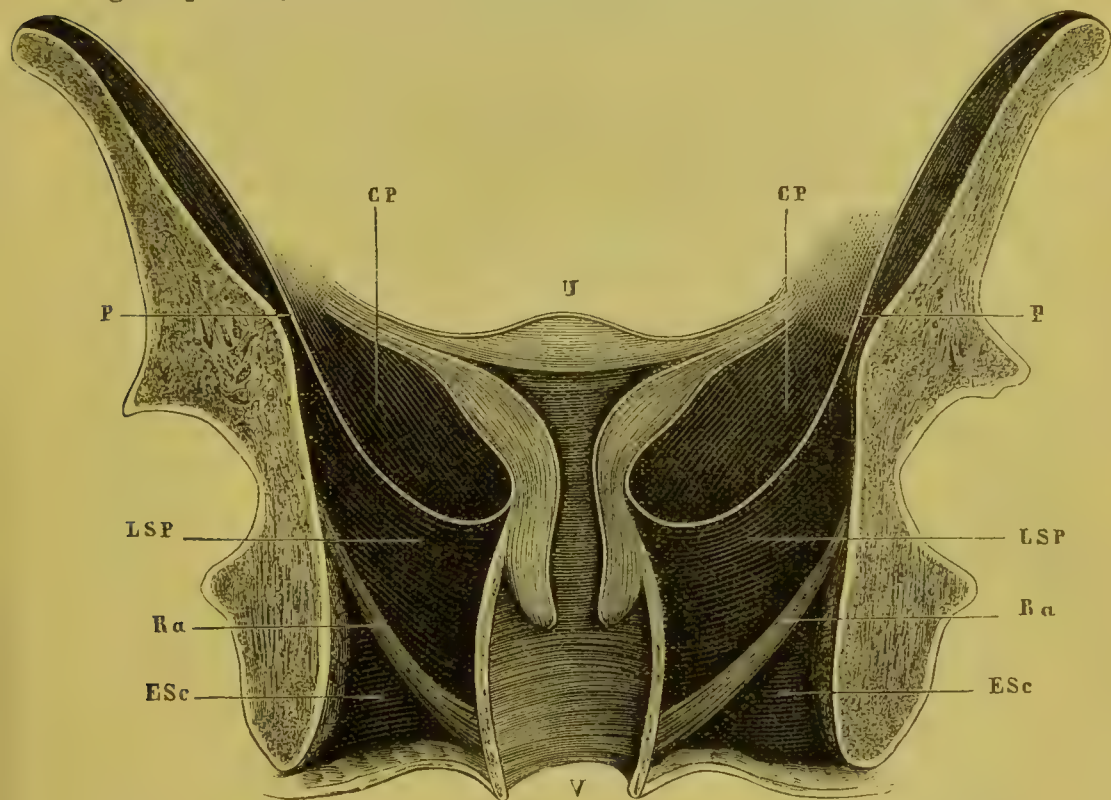


FIG. 23.—Transverse section of the pelvis, showing the three cavities (after Beigel). 1. CP, peritoneal cavity; 2. LSP, sub-peritoneal space; 3. ESc, sub-cutaneous space; v, vagina; Ra, levator ani; P, peritoneum; U, uterus.

extending all round, and making an exit for itself by all the communications which may be established from the pelvic cellular tissue through the natural orifices to outside the pelvis, at the iliac fossa, hip, thigh, &c.

Thus the broad ligaments, besides being a means of suspension for the uterus, are of capital importance in the physiological and pathological history of this organ, of its appendages, and of the peri-uterine regions; they give the key to the differential diagnosis of hematoceles, pelvi-peritonitis, peri-uterine phlegmons, abscesses of the broad ligaments, phlebitis, peri-uterine angioleucitis and adenites of the same region, both in a puerperal and non-puerperal condition. They cannot be too much studied or too well known.

CHANGES IN THE UTERUS AT DIFFERENT AGES

In the genital organs of women, and especially in the uterus, the volume, form, external aspect, cavities, structure, all the anatomical conditions in fact, vary from age to age.

External aspect.—The size of the organ, which is small in the foetus and child, increases considerably at puberty, as do all other parts of the generative system: but it is very inferior in the nullipara to what it is in the multipara, and it diminishes in old age under the influence of the retrogression and atrophy which follow the menopause.

The form, which is almost cylindrical in the foetus, gradually assumes the aspect peculiar to it, in proportion as the body undergoes its normal development: so that at puberty in the nullipara, but especially in the multipara, the resemblance of the uterus to a small inverted gourd becomes very striking. Its position, direction, and relations change also with age on account of the difference of development which exists from one period of life to the other, not only between the various parts of the genital organs, but also between those of the pelvis. The pelvic cavity being but slightly developed in childhood, the uterus, like the bladder, is higher above the brim at this age than in the adult, and is generally inclined, and even curved, forwards (Figs. 9, 28).

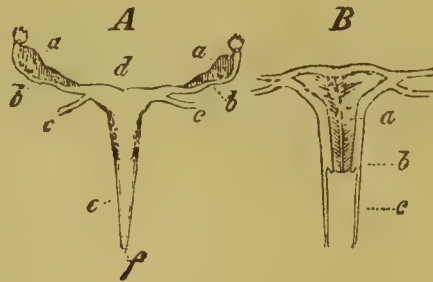


FIG. 24.—The uterus and its appendages in the foetus at the end of the fourth month, natural size. A, external view: *a*, ovaries relatively voluminous, almost as long as the Fallopian tubes; *b*, oviducts; *c*, round ligaments; *d*, uterus; *e*, vagina; *f*, vaginal orifice. B, cavities: *a*, branches of the *arbor vitæ* extending to the fundus; *b*, vaginal portion of the uterus; *c*, vagina.

It is, however, especially in the *antagonism of the body and neck* that the most remarkable differences are to be seen from one age to another.

In the child the neck is very large, the body very small. The neck is almost cylindrical. The body is triangular, more flattened than in the adult; its superior border is straight or slightly concave, a vestige of the coalescence of the uterine cornua; its lower extremity is continuous with the neck without any line of demarcation. The isthmus is indicated at this age less by a contraction than by a change of direc-

tion between the neck and the body; for the result of Boullard's¹ researches, confirmed by my own observations, is that there is very

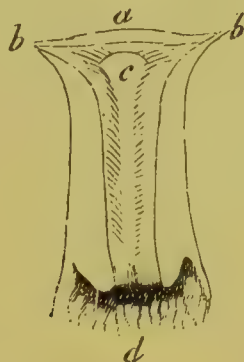


FIG. 25.—Uterus at the commencement of the seventh month, opened, of natural size. *a*, fundus with thin walls; *b b*, orifices of the Fallopian tubes; *c*, arbor vitæ; *d*, neck, remarkable for the relative thickness of its walls.

frequently, if not always, anteflexion of the body on the cervix. (Fig. 28.) In the girl at puberty, and still more in the adult, the body is

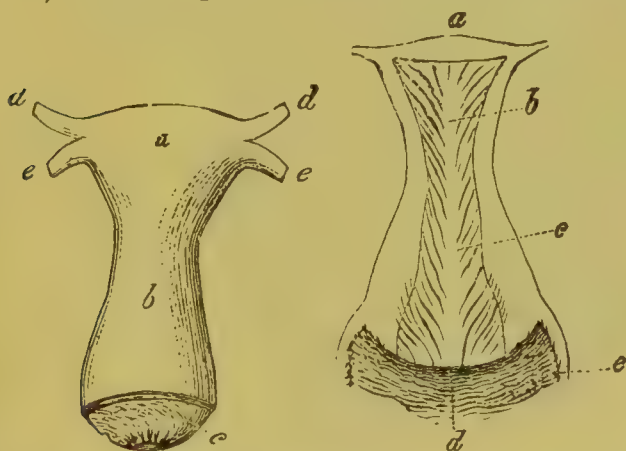


FIG. 26.

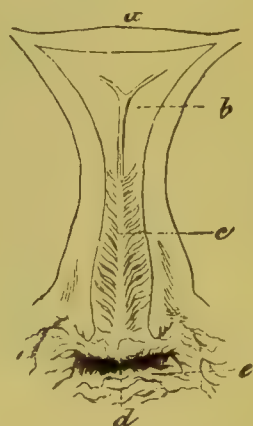


FIG. 27.

FIG. 26.—Uterus at birth, natural size; external view. *a*, body; *b*, neck, very large, rendered clearly distinct from the body by the formation of the isthmus; *c*, vaginal portion of the neck; *d d*, Fallopian tubes; *e e*, round ligaments. Cavities: *b*, cavity of the body showing the arbor vitæ. The fundus *a* and the walls are relatively thin; *c*, neck, the walls of which are very thick; *d*, vaginal portion of the cervix; *e*, vagina.

FIG. 27.—Section of uterus at seventh year, open, of natural size. *a*, fundus; *b*, body, the cavity of which still shows a trace of the internal longitudinal fold resulting from the union of the two primitive uteri, and forming a continuation of the arbor vitæ of the neck; *c*, neck still longer than the body and with thicker walls; *d*, vaginal portion of the neck; *e*, vagina.

developed more than the neck, and becomes slightly curved, especially behind. The upper border is often straight, sometimes even it is almost convex; its union with the neck is well marked by an isthmus. The neck, in place of remaining cylindrical, has assumed the form of a

¹ *Quelques mots sur l'utérus.* Thèses de Paris, 1853, No. 87.

small barrel, contracted above, tapering below, and is shorter. The anterior flexion of the body on the neck diminishes, according to Cusco,¹ in consequence of the unequal development, which being greater on the anterior than on the posterior surface, helps to straighten the organ. Still, a slight degree of ante flexion or rather inclination forwards often continues, not only in the girl after puberty, but in the married woman, provided she has never been pregnant.

In the nullipara the characteristics of virginity remain, with the exception of a slight increase in the size of the whole of the organ, caused doubtless by the exercise of a new function. We may also admit some difference in the vaginal portion of the neck: it often loses its slightly conical shape, and becomes rather flattened. The cases in which the neck is normal must be distinguished from those in which it is quite conical. In the latter cases coitus does not modify the conicity

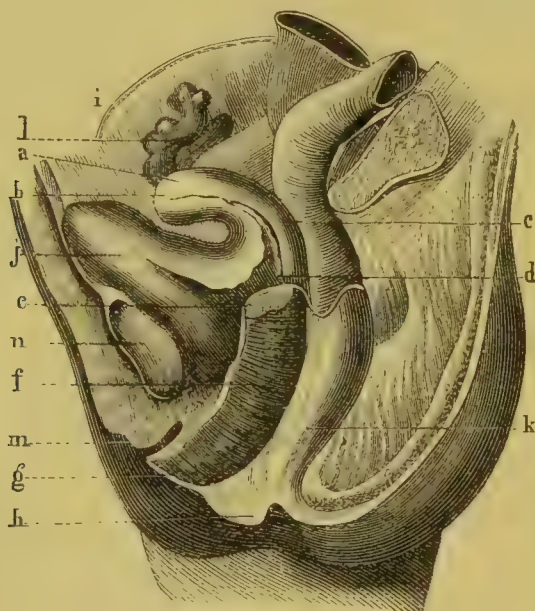


FIG. 28.—Uterus of a foetus at birth, side view seen in its relations, showing the normal ante flexion natural during foetal and infantile life (after Boullard and Bourgery). *a*, body of the uterus flexed forwards; *b*, fundus of body looking forwards; *c*, neck, relatively very large; *d*, section of the peritoneum; *e*, cervix; *f*, vagina; *g*, hymen; *l*, Fallopian tube, behind which the ovary is seen; *j*, bladder; *k*, rectum; *n*, symphysis pubis.

in the least; on the contrary, it persists and is even increased to a certain extent, owing to the penis being apt to pass below the neck and so increase the depth of the posterior utero-vaginal *cul de-sac*, and is one of the most unmistakable causes of sterility.

In cases where the cervix is of normal shape, the pressure determined by the penis during coitus is made on this organ, and gradually diminishes the convexity so as slightly to flatten it and render the two

¹ *De l'antéflexion et de la rétroflexion de l'utérus*. Thèse de concours, pp. 18, 21. Paris, 1853.

lips more distinct. These characters are very nearly those of Rœderer's¹ *uterus virgineus*.

In the primipara, and still more in the multipara, the body is much larger than the neck; besides increasing in size it changes in form and becomes convex in every direction, especially at its superior border. Generally it becomes quite straight, sometimes, on the contrary, the flexion increases. In this case, however, the flexion is not exclusively forwards; it may be backwards or to one side, according to the direction in which the determining cause has acted on a uterus in which the consistency may have been diminished, whilst the size has been increased by pregnancy and parturition.

In old women atrophy of the organ takes place. This is more active in the body than in the neck, restoring in some degree the relative proportion of these two parts to what it was in the child, or at least before the period of sexual activity. Like Cruveilhier,² I have

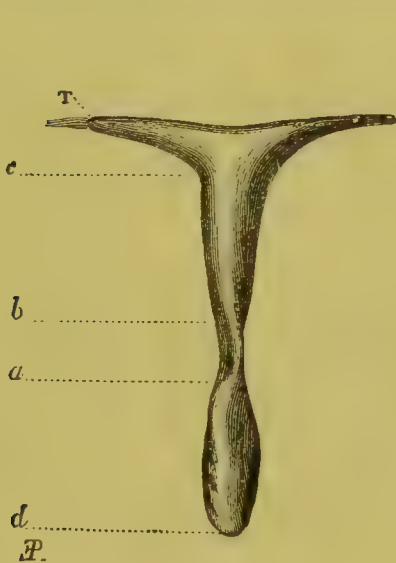


FIG. 29.

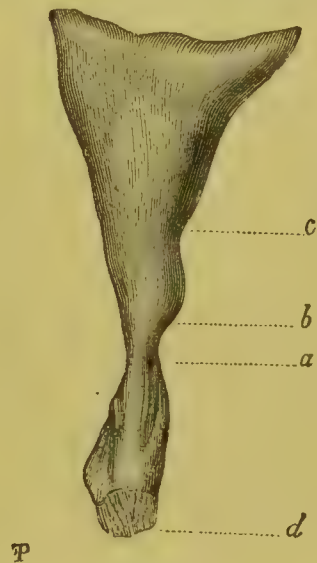


FIG. 30.

FIG. 29.—Mould of the uterine cavities in a virgin of seventeen years. *c*, cornua of the uterus, ceratine portion of the body; *cb*, inferior segment of the body; *ba*, isthmus; *ad*, neck, with impression of the folds of the *arbor vitæ* and the lateral depression of the column. *T*, Fallopian tubes, slight contraction at the point of union of their cavity with that of the body (after Guyon).

FIG. 30.—Mould of the uterine cavities in a multipara, triangular form of the cavity of the body, enlargement and deformity of the uterine cornua, enlargement of the inferior segment of the body which blends with them. *ab*, isthmus; *ad*, neck, with double depression (after Guyon).

remarked that the obliteration of the vaginal portion of the neck is very common.

Internal conformation.—The *cavities of the uterus* are very small, but they still differ considerably in their size and form in the child, the

¹ *Icones uteri humani*.

² *Anat. descript.*, t. ii, p. 474. Paris, 1866.

nullipara and multipara. They form together a sort of canal flattened from before backwards, constricted at the isthmus and widening out in the body as it approaches the fundus. According to Sappey,¹ their length is:

In the nullipara about 52 millimetres, the body measuring 22, the neck 25, the isthmus 5.

In the multipara about 57 millimetres, the body measuring 28, the neck 24, the isthmus 5.

I think these measurements rather exaggerated, especially that of the body in the multipara when there is no disease. Apart from this, the difference in the relative length of the body and neck, the latter of which is the greater in the nullipara and the former in the multipara, is in harmony with the difference in size of the two parts seen externally (Figs. 29, 30, 34, 35). The other two dimensions are very small, especially the distance separating the anterior from the posterior surface. On this account it is very difficult to move the sound in either direction.

The cavity of the body, which hardly exists in the foetus, becomes triangular after puberty. The walls are flat, and applied one against the other, unless a little mucus is interposed between them. The borders are convex, and are directed towards each other in such a way that the convergence of their convexity towards the centre diminishes to an equal extent the uterine cavity. Therefore a slightly curved sound when introduced into this cavity cannot easily be moved from one side to the other, still less be rotated upon itself. The superior angles, very acute, present the last folds of the mucous membrane of the Fallopian tubes, and it is the very close proximity of these folds which forms the only obstacle to the passage of a fluid from the cavity of the body into that of the Fallopian tubes. The inferior angle, less acute, corresponds with the *os internum*. In the multipara the cavity of the body is distinguished by different characters—greater capacity and an interval between the two surfaces, or at least the possibility of separating them and of moving the sound between them; superior angles less acute. The form is triangular, but the margins are very seldom convex, sometimes they are straight, often concave, hence the marked increase of the cavity circumscribed by them. This latter tendency seems to be more marked when the number of pregnancies has been considerable, and when they have occurred in quick succession.

The cervical cavity, large in the child, is fusiform, flattened from before backwards, presenting consequently two walls, two borders and two orifices. The walls are unequal, traversed from top to bottom by a vertical projection, from which secondary oblique and ascending projections are given off, an arrangement which has received the name of *arbor vitæ* (Figs. 29, 32, 35, 38). The posterior tree only becomes visible a few millimetres above the inferior orifice; it increases in size, and deviates to the left in proportion as it approaches the superior orifice. The anterior tree is, on the contrary, directed towards the right.

¹ Op. cit., p. 664.

Consequently the two cervical walls fit into each other in place of one being applied one against the other, as in the cavity of the body. These kind of columns are analogous to the columnæ carneæ of the



FIG. 31.—Transverse sections taken from the upper half of the cervix, showing the dovetailing of its walls, especially of the two longitudinal projections, which may be said to be the trunks of the *arbor vitæ*, and consequently the mechanism for the occlusion of the isthmus or *os internum* (after Guyon). 1, virgin uterus at sixteen years old; 2, uterus in a nullipara; 3, uterus in a multipara. Exceptionally there are two posterior projections, but only one anterior and median.

heart. It is to Guyon¹ that we owe the knowledge of their fitting into each other, and of several other facts relative to the study of the uterine cavities.

The *os internum* is a true strait of 5 millimetres in length, in which the *arbor vitæ*, stripped of their branches, dovetail into each other so well that, owing to the narrowness of the orifice, they fill it entirely and make it difficult for the sound to enter; but this resistance overcome, it enters easily into the cavity. The sensibility of this orifice and the circular arrangement of the bundles of muscles which form a veritable sphincter at this point, in addition to the narrowness of the opening and the dovetailing of the posterior and anterior columns, increase the difficulties experienced, in the case of certain morbid conditions or of virgins, in passing the sound from the cavity of the neck into that of the body (Figs. 29, 35). At other times, on the contrary, as the result of other morbid conditions, nothing is easier than to pass through this orifice (Fig. 32). As a rule, a catheter of 2 millimetres in diameter will enter it. After the menopause the *os internum* gradually contracts, and in some women is at last obliterated.

The *os externum* is broader, though occasionally it is rounded and narrow. This narrowness may be more or less marked, even reaching the degree at which it is known as atresia, which is really imperforation or obliteration. Then the retention of mucus or of menstrual blood increases the capacities of the cavities, as may be seen in the accompanying figure taken from Guyon (Fig. 32 *eb*, *ad*). Often, too, in such a case the projection of the uterus into the vagina is conical, and the orifice may be at the summit of this cone or on one of its sides a little in front or a little behind. Generally, however, it is in the form of a slit, on which, in the fœtus and infant, we can see the starting-point of the trunks of the *arbor vitæ*, which gives to this opening a form somewhat similar to that of the

¹ *Étude sur les cavités de l'utérus à l'état de vacuité*. Thèses de Paris, 1858. Hagemann (*Archiv für Gynecologie*, Bd. v, p. 295) has arrived at the same results.

mouth (Guyon). These projections are effaced with age so as to reduce the orifice to a straight line, the margins of which are in contact in the child and adult nullipara. The latter differs from the former in

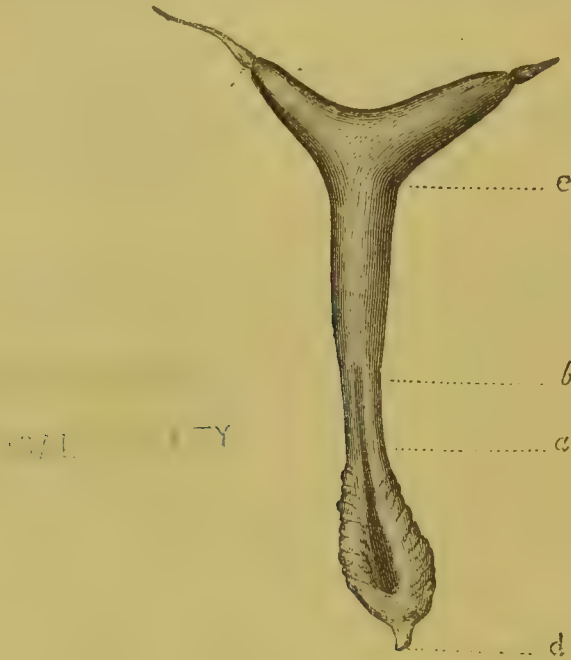


FIG. 32.—Mould of the uterine cavities in a nullipara forty-two years of age. There was a well-marked contraction of the *os externum*. Its form is the same as that of the uterus in the virgin (Fig. 29), but the cornua are broader, the cervico-uterine isthmus is dilated, the upper segment of the body and the cervical cavity are more developed (after Guyon).

the slight flattening of the cervix, the lips of which seem to allow the orifice to open more easily. In the multipara the slit is open, irregular,

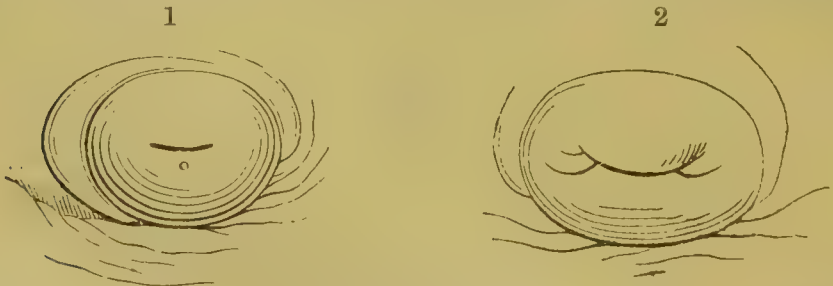


FIG. 33.—Differences in the vaginal portions of the cervix in the nullipara, 1; and in the multipara, 2.

and indented by cicatrices consequent on lacerations caused at delivery. To sum up, there are differences in the uterus of a nullipara and that of a multipara which should prevent their being confounded.

1st. *Externally*, the uterus of the multipara is less fixed, it has a less elevated position and a more marked variability of inclination than the uterus of a nullipara. Its two surfaces and its upper border are rounded. The vaginal portion of the neck is less conical and less elongated. The orifice is longer, the lips irregular and indented, open-

ing easily and allowing the entrance of the point of the finger. The uterus is larger; all its diameters have increased, especially the longi-

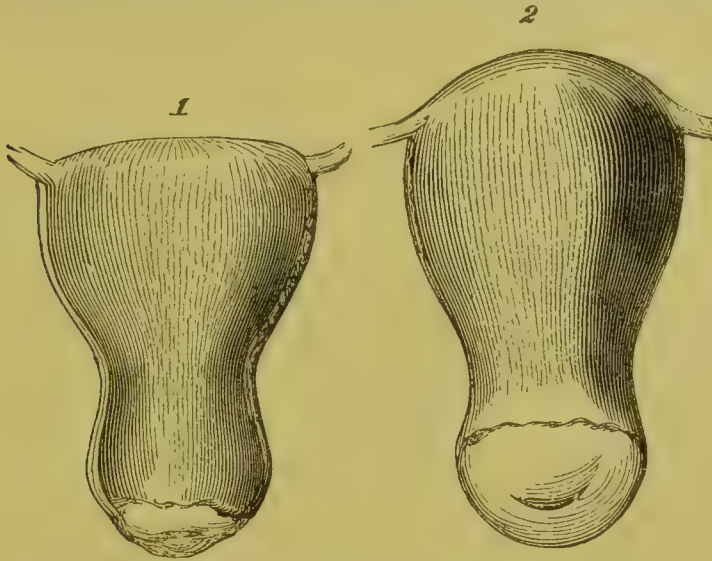


FIG. 34.—Differences in the external conformation of the uterus in a nullipara, 1; and in a multipara, 2 (after Dubois).

tudinal one. The increase of size, and especially of length, is shown

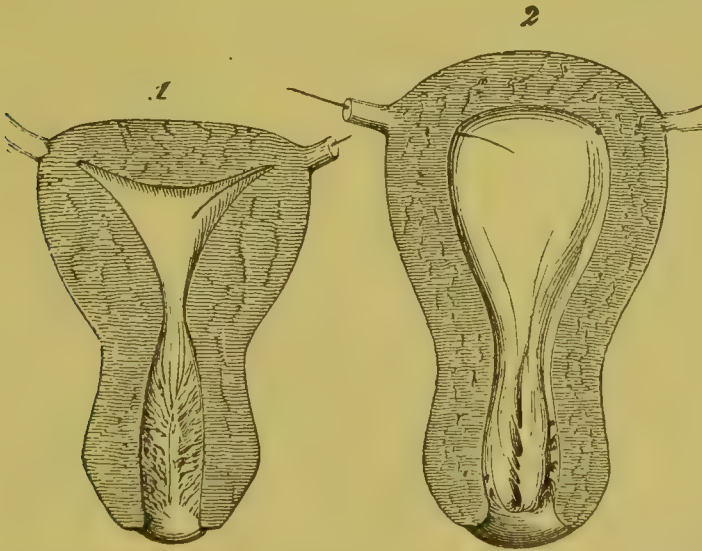


FIG. 35.—Differences in form and size of the uterine cavities. The nullipara 1; and the multipara, 2 (after Dubois).

more in the body than in the neck. The walls of the organ have acquired a greater thickness.

2nd. *Internally*, the cavity of the body is increased and has changed in shape: its borders, in place of being convex, have become concave. The superior angles are no longer funnel-shaped. The openings of the Fallopian tubes are broader. The cavity of the neck is proportionally shorter and rather broader. The *os internum* is more open, and allows

the sound to penetrate more easily. The axis of the two cavities is less frequently curved forwards, and when it is curved either forwards, backwards, or to one side, it is more easily rectified by the introduction of an instrument, unless there are adhesions or some morbid condition.

STRUCTURE OF THE UTERUS

The structure of the uterus is not analogous to that of any other organ. The walls are thick, but not equally so throughout. Hardly exceeding 8 millimetres at the opening of the Fallopian tubes, they are as a rule, according to Sappey,¹ 10 millimetres thick at the fundus and from 12 to 15 anteriorly and posteriorly and at the lateral borders.

1. Its arteries are the ovarian from the aorta and the uterine from the internal iliac, without counting those of the round ligaments arising from the epigastric. They enter the uterus by its borders, not without anastomosing considerably, describing numerous flexuosities and corkscrew windings, which have led to their being compared to the *helicine arteries* of the erectile tissues generally and of the cavernous bodies of the penis in particular.

2. Its veins, which are voluminous and almost without valves, anastomose largely and are adherent to the tissue of the organ, forming during pregnancy dilatations known as *sinuses*. They emerge along the lateral borders and form two vast plexuses contained in the folds of the broad ligaments and, without joining the veins of these ligaments which flow into the epigastric or external iliac, they empty themselves, some into the internal iliac, others into the vena cava on the right and the renal vein on the left, being marked during the whole length of their course by a plexus analogous to the pampiniform plexus in man.

3. Its lymphatic vessels, studied especially during pregnancy or after delivery by Mascagni, Cruveilhier and others, have lately been investigated by Leopold² in the unimpregnated uterus in woman, as well as in the female mammalia, and by Lucas Championnière³ in the uterus after delivery. Whether they arise from the mucous membrane or from the muscular wall, the hypertrophy of which they share in pregnancy, these lymphatic vessels are divided, like the veins, into two principal groups on each side; the inferior, which come from the cervix, open into the lateral pelvic glands; the superior into the lumbar ganglia. Championnière has discovered that the lymphatics of the cervix unite in vessels of various sizes at the union of the body and cervix; generally there is one much larger than the others; they emerge at this level into the lateral cellular tissue at the base of the broad ligaments following the course of the blood-vessels and at once join one or two little ganglia which are not constant but which, when wanting, are replaced by a lymphatic network which forms a real and important

¹ Op. cit., p. 665.

² *Archiv für Gynecologie*, Bd. vi, p. 1. Berlin, 1873.

³ *Lymphatiques utérins et Lymphangite utérine*. Paris, 1870.

vascular plexus. The largest at last reach the posterior subperitoneal surface of the broad ligament, and from there pass to the deep pelvic and sacral ganglia, sometimes even reaching an inguinal and obturator ganglion.

The lymphatics of the body arise chiefly from the portion which adjoins the placental surface; they anastomose with those of the ovaries and Fallopian tubes and, following the utero-ovarian venous plexus, they accompany these vessels to the vascular plexuses and lumbar ganglia where they end. It is impossible to attach too much importance to the exact knowledge of the lymphatics of the uterus and its appendages. In the sites indicated by anatomists I have frequently observed kernels of inflammatory induration, which could be nothing else than retro-uterine adenitis, and this opinion has occasionally been confirmed by autopsies. I am more and more convinced every day of the important part played by angioleucitis, adenitis and even peri-uterine adenomata, not only in the history of uterine and peri-uterine phlegmasia in puerperal maladies, but in a number of others accompanied by deep and continuous pain, which otherwise would be inexplicable.

4. The nerves of the uterus and ovaries, according to Frankenhäuser, arise directly and indirectly from the celiac plexus through the intervention of the renal plexus which, through its inferior ganglion, is distributed to the ovaries and spermatic ganglia. The aortic plexus by its upper part (superior mesenteric plexus) supplies these spermatic ganglia, which would be more correctly designated genital ganglia. These ganglia, four in number, receive two large branches from the great sympathetic and give off a great number of nerves to the ovaries. Below the origin of the inferior mesenteric artery is the great uterine plexus (lumbo-aortic), which descends to 1 centimetre from the division of the aorta and is formed of the principal branches of the genital ganglia with the addition of small branches proceeding from the four lumbar ganglia of the great sympathetic. On the promontory it is divided into hypogastric plexuses, which are joined by branches from the terminal ganglia of the sympathetic and are situated behind the rectum, on the inner side of the pelvic vessels, and are distributed to the lateral borders of the cervix uteri. Each hypogastric plexus measures from 7 to 10 centimetres, and in its course supplies branches to the mesorectum, to the mesentery of the sigmoid flexure, and to the ureter. There is a large cervical ganglion on each side of the neck, easily discovered in the newly-born even without preparation, but covered in adults by the pelvic fascia and superimposed nerves. It extends downwards as far as the folds of Douglas, and measures, in the empty uterus, about 2 centimetres in length and 1 in breadth, and during pregnancy 5 centimetres in length and 2 or 3 in breadth. The greater number of the uterine nerves arise from these two ganglia, the rest coming directly from the hypogastric plexus. The cervico-uterine ganglia receive their afferent branches not only from the hypogastric plexuses, but also from the second, third and fourth sacral pairs. They supply branches not only to the uterus

but also to the vagina, bladder and rectum. Besides these principal ganglia there are on each side two small ones for the urethra and bladder, the latter sending some branches to the anterior surface of the uterus. The nervous branches from the cervico-uterine ganglia enter the cervix horizontally; passing upwards they pierce the inferior portion of the body obliquely, whilst above, along the borders of the uterus, they run almost vertically, uniting with each other in the thickness of the anterior and posterior walls; they also anastomose with the ovarian nerves. The ramifications of the uterine nerves may be traced as far as the mucous membrane in the neck, but this cannot be done in the case of the body. Frankenhäuser has found motor fibres in the uterine plexus but he has not been able to discover sensory fibres. It seems impossible to distinguish the filaments arising from the cerebro-spinal and ganglionic systems.

5. The serous envelope of the uterus is nothing else than the peritoneum, which, being reflected from the posterior surface of the bladder to the anterior surface of the *body* of the womb, covers all the posterior surface of the fundus including the *neck* and the upper part of the posterior vaginal wall and extends right and left over the broad ligaments.

6. The uterine *mucous membrane* was for a long time unknown. It was Coste¹ who demonstrated at the same time its existence, its structure and its hypertrophy into the decidua during pregnancy. I helped to make this discovery known and to develop it twenty years ago.² Since then Robin has described the histology of this membrane,³ and other writers have studied the formation of the decidua and the regeneration of the uterine mucous membrane.⁴

The mucous membrane of the uterus is different in the body and in the neck.

In the *body* it is attenuated toward the angles, where it is continuous with that of the neck and of the Fallopian tubes. It is thickest towards the centre, varying from 3 to 6 millimetres, according to Coste. The free surface is smooth, without wrinkles,

¹ *Mémoire sur la formation de la caduque dans l'œuf humain*. Comptes rendus des séances de l'Académie des Sciences de Paris, t. xv, 1842, and t. xxiv, 1847. *Traité général du développement*. Paris, 1848.

² *De l'œuf et de son développement dans l'espèce humaine*, p. 127. Montpellier, 1845.

³ Ch. Robin, *Mémoire pour servir à l'histoire anatomique et pathologique de la membrane muqueuse utérine, de son mucus et des œufs, ou mieux glandes de Naboth*, see *Archives générales de médecine*, t. xvii and xviii. Paris, 1848.

⁴ Colin, *Étude à l'œil nu sur la surface interne de l'utérus après l'accouchement dans l'état physiologique, dans l'état pathologique, et en particulier dans la fièvre puerpérale*. Thèses de Paris, 1847, No. 229; see also A. Richard, *De la muqueuse utérine*. Paris, 1848; Ch. Robin, *Mémoire sur les modifications de la muqueuse utérine pendant et après la grossesse*; see *Mémoires de l'Académie de médecine*, t. xxv, p. 81, Paris, 1861; Ercolani, *Della struttura della caduca uterina*, Bologna, 1874; Léopold, *Studien über die Uterusschleimhaut während Menstruation, Schwangerschaft u. Wochenbett*; the paper is accompanied by a large number of figures representing sections of the mucous membrane magnified in these various states. *Archiv für Gynecologie*, Bd. xi, pp: 110, 443, &c. Berlin, 1877.

papillæ or villosities, but perforated with a multitude of orifices which are the mouths of as many follicles or tubular glands, and covered

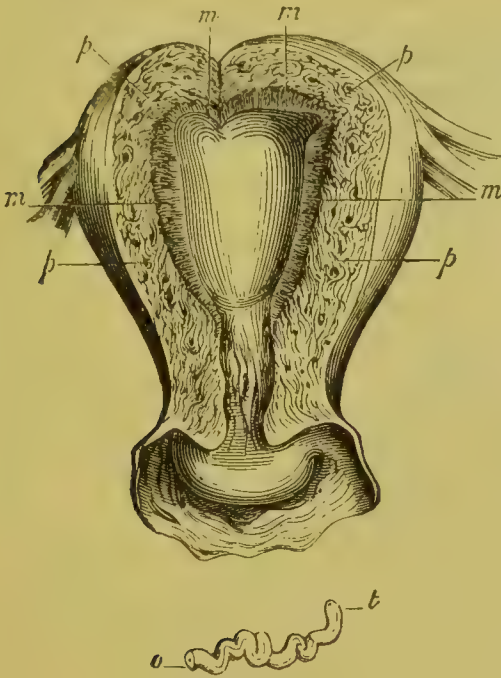


FIG. 36.

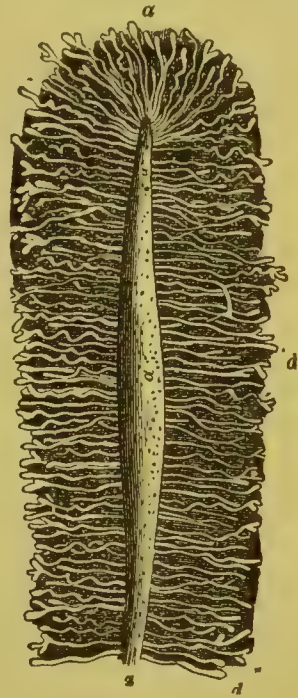


FIG. 37.

FIG. 36.—Internal mucous membrane of a uterus, the anterior wall of which has been partially removed (after Coste). *p p*, tissue proper, in which numerous vascular orifices are seen, resulting from section of the vessels; *m m*, mucous membrane, the regularly striated appearance of which is remarkable, as well as its rose colour. The little vermicular body placed below the uterus is a small gland; *t*, initial extremity, ending in *cul-de-sac*; *o*, terminal extremity, presenting a narrow orifice opening upon the internal surface of the uterine cavity.

FIG. 37.—General view of the glands or flexuous follicles of the uterine mucous membrane. *d d d*, simple or double *cul-de-sac* of these follicles; *a a a*, thin cup-shaped orifice opening on to the surface of the mucous membrane.

with conical cells of from 3 to 4 hundredths of a millimetre, with pyramidal base furnished with vibratile cilia smaller than the vibratile epithelium cells of the Fallopian tubes which are not less than 7 hundredths of a millimetre. This epithelium, vibratile in the empty uterus, becomes tessellated during gestation, when the mucous membrane becomes the decidua. The tubular glands, slightly flexuous and cylindrical, adhere by their blind end which is sometimes bifid to the subjacent tissue; they open on the surface of the mucous membrane into a little cup surrounded by a kind of vascular polygon, and are lined with nucleated epithelium. Their diameter is about equal to the twelfth part of their length, and the space separating them is about equal to their diameter. They participate in the general hypertrophy of the organ during pregnancy. The tissue between the follicles is formed of occasional fibrous bundles (cellular, laminar or connective tissue), of fibro-plastic elements, especially of nuclei, cells,

fusiform bodies and of a great deal of granular amorphous matter. Thus the framework of the membrane is in the embryonic state and in every stage of development. The uterus is the only organ in which we constantly find a tissue in process of organisation. This peculiarity is in direct relation with the modifications in size and structure which are necessitated by the fulfilment of its functions; it determines at the same time a special direction for its morbid processes; it explains several obscure points in its pathology; it helps also in the search after therapeutical remedies and may explain the occasional unexpected effects produced by them. At the menstrual period the mucous membrane greatly increases in thickness, it becomes congested and remains gorged with blood till the hæmorrhage is established, or rather till it has ceased. Its surface is puffed out and furrowed with wrinkles which resemble the cerebral circumvolutions. The glands participate in this congestion which is almost a temporary hypertrophy. Their secretion, generally insignificant, becomes considerable, especially before and after the hæmorrhage.

In the *neck* the mucous membrane is very adherent as in the body, but it is thinner, having a thickness of only 1 or 2 millimetres; it is wrinkled, lined with ciliated epithelium formed of a *substratum* analogous to that of the mucous membrane of the body, and in which embryonic elements, such as the fibro-plastic fusiform bodies, predominate: lastly, it is furnished abundantly with secreting organs, regarded formerly as simple follicles with ampullary blind ends and constricted neck, but lately described by Sappey as racemose glands with two or three branches and subdividing to terminate in a *cul-de-sac*. These glands are found in the uterine and vaginal orifices as well as in the cavity of the neck. They are remarkable for their size in their whole course. Their orifices are seen at the bottom of the grooves which separate the branches of the *arbor vitæ*. They secrete a thick and very viscous mucus, alkaline like that of the body, the reverse of the vaginal fluid which is acid. This mucus in accumulating forms in the fœtus, and often in the adult, especially during pregnancy, a very adherent gelatinous cylinder which fills up the cavity of the neck. These glands frequently become the seat of a partial or total dilatation, which transforms them into a kind of cyst known as Naboth's eggs. These cysts, as they grow, become embedded in the muscular coat. The glands of the neck are the organs which specially produce uterine leucorrhœa. Although more accessible than the follicles of the body to our means of treatment because nearer to us, they are not any more amenable to the action of the means employed, owing to their position at the bottom of the rugged grooves into which they open between the ramifications of the *arbor vitæ*. Fig. 38, taken from Tyler Smith,¹ gives an idea of the difficulty there is in reaching them.

The muscular envelope, or what has been called the tissue proper of the uterus is very complicated. Super-position of deep layers, intersection of superficial bundles, a vascular development peculiar to

¹ *On Pathology and Treatment of Leucorrhœa*, p. 25. London, 1855.

erectile organs, all contribute in giving this organ a texture rendered more difficult of description by the fact that till now anatomists



FIG. 38.—General view of the transverse or oblique ramifications of one of the two median columns of the mucous membrane which constitute the anterior and posterior *arbores vitæ* in the cervical canal of a virgin, magnified nine diameters.

have hardly taken into account the facts gathered from development, from comparative anatomy and from the musculo-vascular conditions of erectility which alone could throw any light on this study. At present we know the structure of the uterine tissue, the elements which enter into its composition, the wealth and special arrangement of its blood-vessels, and the super-position and the mutual relations of the majority of the muscular bundles which characterise the texture of the womb.

The essential elements of the tissue of the uterus are smooth mus-

cular fibres, incorrectly called fibre-cells, muscular fibres of organic life characterised by the presence of a nucleus not exceeding 7 hundredths of a millimetre in length and 5 thousandths of a millimetre in width in the unimpregnated uterus, but attaining, during gestation, ten times the length and five times the width and allowing of the penetration of a few fatty granulations. The hypertrophy of the organ during pregnancy does not consist merely in the increased size of the elements already existing; there is also a formation of new muscular elements and, in addition to the growth of contractile fibres, is added that of the fibrous or connective tissue which joins them together.



FIG. 39.—Smooth muscular fibres of the unimpregnated uterus (after Farre).



FIG. 40.—Fibre-cells of the uterus in state of gestation (after Wagner).

After delivery atrophy brings these elements back to their normal condition. This peculiarity characterises the muscular membrane of the uterus as well as its mucous membrane. If the muscular tissue

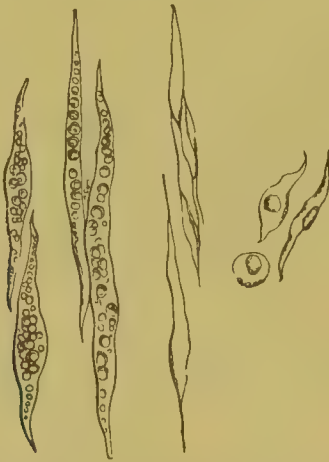


FIG. 41.—Progress of involution or disintegration and renewal of uterine fibres after delivery. Process of fatty degeneration (after Heschl).

has not, like the mucous membrane, the faculty of development carried to the point of renewal, it is always, like the latter, to a certain extent in process of development, and consequently has the characteristic of *anatomical instability*, thus forming a striking contrast to the stability of all other organs. This special property of the uterine tissue plays an important part in the development of its diseases, imprints a special

character on its pathology and exercises a marked influence on its therapeutics.

It is now agreed that the contractile bundles are composed of three layers of elementary fibres. The deep layer is formed of two orbicular muscles arranged in concentric curves, which converge right and left around the orifice of the Fallopian tubes as a central point, and to which Ruysch gave the name of *detrusor placentaë*, attributing to them the function of loosening the placenta. At the isthmus which unites the cavity of the body with that of the neck this layer is formed of simple circular bundles, intersecting at acute angles and constituting a constrictor, the presence of which accounts for the occlusion of the uterus during gestation and explains its tendency to contract at this point like a sphincter, the difficulty often experienced in passing the sound, and the difference between the resistance presented by this orifice and the dilatability of the *os externum* and cervical cavity either during pregnancy or in certain morbid conditions, and lastly, the frequent obliteration of the *os internum* after the menopause.

Hélie's¹ recent researches have confirmed the truth of this description. The central layer seems to be the thickest and most inextricable. According to Pajot² it is composed principally (in the upper regions of the anterior and posterior surfaces where it can be studied) of muscular bands in loops which cover one another. The superficial layer, on the contrary, is most easily studied in the unimpregnated uterus, especially in children. As Rouget has observed, these organs preserve the traces of the primitive forms till puberty, the uterine cornua are still distinguishable under the thin muscular layer which covers them, the tissue proper of the uterus is only slightly developed, the connections of the superficial layers with neighbouring membranes are more marked, and these membranes themselves are thin, transparent and free from the adipose tissue which afterwards invades them, and thus present themselves to the observer under the most favorable conditions for study.

The right and left segments of the uterus have doubtless, like the Fallopian tubes, longitudinal fibres and layers of circular fibres which are a continuation of those of the oviducts. In addition, however, to these special fibres, which are found in much greater number on the two lateral halves of this organ than on the Fallopian tubes, there are doubtless common fibres which complete the fusion of these two halves in order to make one central organ having one cavity. Above these muscular layers there is a common envelope, also muscular, forming a broad contractile apparatus, uniting the movements of the womb with those of the Fallopian tubes, ovaries, broad ligaments, round ligaments and ligament of the ovarian vessels, *i.e.* with the so-called uterine appendages.

If we spread the genital organs of a child on a piece of glass, it is

¹ *Journal de la section de médecine de la Société académique du département de la Loire-Inférieure*, t. ix, p. 125. Nantes, 1864. *Recherches sur la disposition des fibres musculaires de l'utérus développé par la grossesse*, avec un atlas de dix planches. Paris, 1865.

² Dubois et Pajot, *Traité complet de l'art des accouchements*, p. 437. Paris, 1860.

easy to observe that in the human species, as in the mammalia, the uterus and its appendages are contained in the thickness of a broad muscular membrane, to which the peritoneal ligaments are only subsidiary. It is easy to follow the continuity of the muscular bundles of this membrane with the upper layer of the uterine tissue so well described by Deville.¹

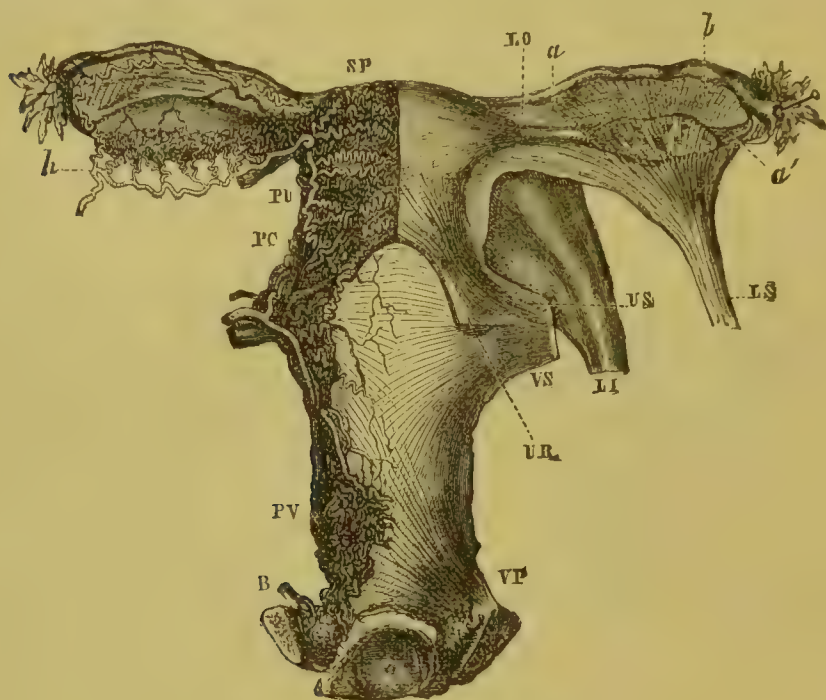


FIG. 42.—General view of the vascular structures of the internal genital organs in woman, in their relations with the superficial muscular system (after Rouget). The vagina, uterus and appendages are seen from behind. Vascular system,—B, bulb communicating on the one side with the spongy tissue of the clitoris, and on the other with the venous plexus of the vagina; PV, semi-circular enlargement of the vaginal venous plexus; PC, cervico-uterine plexus; PU, uterine plexus; SP, helicine arteries of the body of the uterus; h, helicine arteries of the hilum of the ovary. Muscular structures: VP, insertion of the muscular bundles of the vagina into the pubis; VS, bundles of fibres of the same muscular layer from the region of the sacro-iliac symphysis; US, bundles of uterine muscular fibres accompanying the preceding, and constituting in great part the posterior fold of the broad ligaments; UR, retro-uterine ligaments; LI, inguinal or pubic round ligaments spreading over the whole anterior surface of the uterus; LO, ligament of the ovary; LS, superior or lumbar round ligament which accompanies and envelopes the ovarian vessels; a, bundles of muscular fibres from the ligament of the ovary LO, spreading over and interlacing with bundles of fibres b, from the lumbar ligament LS, within the thickness of the ovary and beyond in the fold of the Fallopian tube before their attachment to this tube and to the fimbriated extremity; a', bundles of fibres from the ovary, forming, with those coming directly from the superior ligament, the tubo-ovarian fringe.

¹ See Cazeaux, *Traité théorique et pratique sur l'Art des Accouchements*, p. 108, 3rd edit. Paris, 1850.

Rouget¹ set out with the double fact that the superficial muscular tunic of the hollow viscera does not always by any means mould itself exactly on their form and dimensions, and that the muscles of organic life at their terminal extremity are constantly in connexion with some portion of the locomotor economy of animal life, bones, tendons, aponeurosis and even muscles. He then studied the arrangement of the superficial contractile envelope of the genital organs in the vertebrate animals as well as in woman. He succeeded in this way in demonstrating that the broad ligaments are not a simple fold of peritoneum, but an expansion of the lateral portions of the uterus, or rather of the subjacent muscular folds, with the serous folds adhering to them very closely, and made up of bundles of smooth fibres, which interlace, forming a network. The central portion of the membrane formed by the whole thickness of these folds at their point of intersection is nothing more than the external layer of the muscular envelope of the uterus. On the median line of the womb down its whole length may be seen the decussation of the muscular bundles from one side to the other (vertical fibres), indicating the meeting and crossing of the two lateral muscular organs (Fig. 42). In this way the bundles derived from the pubic round ligament (LI) spread out in the form of a fan throughout the length of the uterus and interlace with those of the opposite side. The insertions to the sacrum and iliac region (UR, VS, US) are found in the utero-sacral ligaments and the posterior fold of the broad ligament. The bundles of fibres dependent on the ovarian ligament, *mesovarium* (LO) and central fold arise chiefly from the posterior surface of the uterus; the fibres with numerous and elongated nuclei, which intermingle in the stroma of the gland and enclose the Graafian vesicles in the meshes of their network, are probably only their continuation. Another portion of the fibres of the *mesovarium* runs along the lower border of the ovary, and, having reached the external extremity, helps to form the muscular cord attaching the fimbriated extremity to this gland (a'). Lastly, some fibres are detached from the upper border of the utero-ovarian ligament to mingle with the muscular groundwork of the fold of the Fallopian tube, ending in this tube and the fimbriated extremity.

The fibres which constitute the means of insertion of the superficial muscular envelope of the uterus at the lumbar region (superior round ligament), in place of being narrowed into a band, are spread out like a membrane, envelope the vascular cord of the ovarian vessels, traverse it, rise with it to the lumbar region, and are gradually lost in the *fascia propria*, by means of which they are fixed to the posterior wall of the trunk. At their termination some of these fibres radiate into the posterior fold of the broad ligament towards the uterus, others, raising the peritoneum in the form of a fold, are deflected outwards on a level with the ovary, and are attached to the fimbriated extremity (b), whilst the greater number, accompanying the vessels to the hilum

¹ *Recherches sur les organes érectiles de la femme, et sur l'appareil musculaire tubo-ovarien*, see *Journal de physiologie* of Brown-Séquard, t. i, p. 263. Paris, 1859.

of the ovary, seem partly to penetrate into the parenchyma of this gland, partly to cross its erectile bulb, and, continuing their course into the fold of the Fallopian tube, are lost in the contractile envelope of the latter, intermingling with those which arise from the ovarian ligament.

The discovery of this superficial muscular layer explains the mechanism of the application of the oviduct to the ovary at the moment of dehiscence, an important phenomenon the cause of which was unknown. The direction of the two kinds of muscular fibres which, arising from the lumbar region and the uterus, embrace the whole length of the Fallopian tube and fimbriated extremity (LO, LS, *a b*, *a' b'*), perfectly explains the movements executed by these organs when inclining backwards and inwards, the possibility of the flexion of the tube on itself, and the application of the fimbriated end to the surface of the ovary (Fig. 42). The mechanism, in fact, is exactly similar to that by which the opening of a bag purse is closed, the edges of which pucker up when drawn together by traction upon the strings which pass through rings attached at intervals round the mouth of the bag (fig. 43). The movements of the fimbriæ, which, so to speak, sweep the surface of the ovary, and the peristaltic contractions of the Fallopian tube, receive the ovum and carry it to the uterus (Fig. 44).

The movements of the uterus are also due to the morbid or spasmodic contractions of this superficial layer of muscular fibres. Patients are aware of this by the sensations they sometimes experience. These

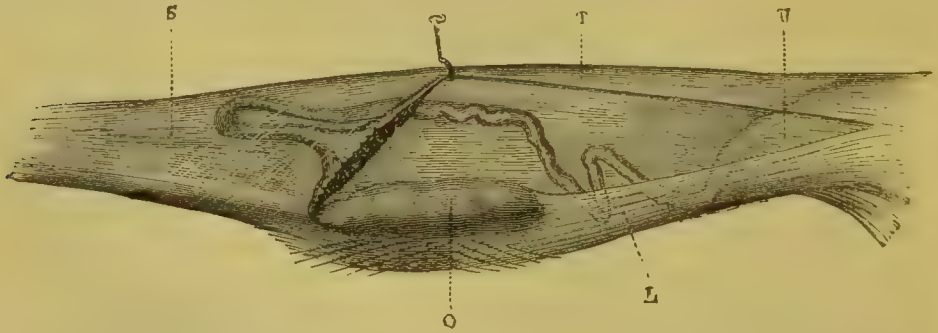


FIG. 43.—Muscular tubo-ovarian arrangement in the rabbit (after Rouget). The muscular membranes of the ovary L and of the Fallopian tube T form a double fold, the borders of which, brought together by muscular contraction, enclose the ovary and fimbriæ which are thus brought into close contact; S, upper round ligament, the muscular fibres of which descend from the lumbar region towards the ovary and the fimbriated extremity; O, ovary; U, uterus.

sensations are not to be confounded with the spasmodic action propagated to other organs which produces such various effects, *e.g.* the globus hystericus. They are so marked that we must admit their reality and attribute them to the partial or total contraction of the superficial muscular envelope. When I add that this contraction is itself the starting point of the erection of the ovary and uterus, that these movements and this erection are probably directly connected with ovulation, menstruation and venereal orgasm, it will be at once

understood what importance is to be attached to them in appreciating the various impressions experienced by women and the subjective phenomena of uterine diseases.



FIG. 44.—Ovary and fimbriated extremity of Fallopian tube in a woman who died during menstruation (after Farre, *ad. nat.*). *l*, broad ligament; *o*, ovary; *r r*, old corpora lutea, traces of Graafian vesicles previously ruptured and cicatrised; *f*, broad portion of the Fallopian tube; *i*, fimbriated extremity applied to the ovary.

The tissue proper of the uterus is erectile as well as contractile. It is to Rouget¹ that we owe the demonstration of this fact also. According to this observer, every erectile organ is nothing more than a muscular organ in which the blood brought by the arteries may be temporarily retained in the capillaries or in the veins transformed into cavernous sinuses and retiform plexuses; the immediate cause, therefore, of erection is to be found in the contraction of the muscular fibres, the primary element of all erectile orgasm. He also observed in the branches of the tubo-ovarian arteries an arrangement exactly similar to that which he had remarked in the helicine arteries of the corpus cavernosum. He discovered that the uterus and ovary each possess a true corpus spongiosum (Fig. 42), and that they may be the seat of phenomena analogous to those of erection. In fact, he demonstrated that, besides the intrinsic muscles of the uterus which may participate in the production of these phenomena, the fibres of the tubo-ovarian muscular membranes have such intimate relationship with the corpora spongiosa of the uterus and ovary, and especially with their efferent vessels, that at the moment of contraction the meshes of the network through which the veins make their way being drawn tighter in every direction, the latter are necessarily compressed and the passage of blood more or less completely obstructed. The erectility of these organs and the part that it plays in ovulation, menstruation and copulation, can be proved by producing an artificial erection in these organs on the dead body. Normally, the uterus and ovaries after

¹ *Recherches sur le type des organes génitaux et de leurs appareils musculaires*. Inaugural thesis. Paris, 1855.

death, if unimpregnated, sink into the pelvic cavity, and even when freed from the mass of intestines weighing on them, the uterus, unless supported by the bladder and rectum, yields to every movement com-



FIG. 45.—General view of the vascular formations of the internal genital organs. PV, semi-circular enlargement of the vaginal plexus; PC, cervico-uterine plexus; SP, helicine arteries of the body of the uterus; *h*, helicine arteries of the hilum of the ovary.

municated to it, bending and falling when no longer held up. In such circumstances, if, after having placed the pelvis in hot water, we inject the ovarian veins till the corpora spongiosa of the ovary and uterus are filled, we shall see the body of the uterus (as soon as it is distended by the injection) plainly straightening itself in the axis of the neck and rising in the pelvic cavity, executing a movement, that is to say, quite analogous to that of the pendent portion of the penis when it straightens itself into the axis of the portion fixed to the pubis and rises towards the abdomen. This change of position is accompanied by a marked change of size and form; the uterus becomes more convex in front, but especially behind; its borders, previously attenuated become round; and the walls of the uterine cavity separate sensibly at the same time, as Gunther and Kobelt have shown in the case of the walls of the urethra.

Analogous, although less marked phenomena occur simultaneously in the ovary, whilst the Fallopian tube undergoes no change of any kind.

As for the vagina, there seems to be no portion which can properly be said to be erectile, unless it be the plexus of broad veins which

runs along its lateral borders, and the sometimes circular plexus which surrounds the first portion only of this canal.

Doubtless, as Rouget remarks, sexual excitement in women is frequently limited to the erectile structures of the bulbs and clitoris; but when it is complete—when venereal crethism reaches its summum of intensity—it must exceed these limits and extend to the essential organs of the genital function, in which is then developed the special voluptuous sensation which announces the accomplishment of the sexual act which the organs of copulation have only prepared.

THE VAGINA AND VULVA

The *vagina* is a membranous canal extending from the neck of the uterus, which it embraces, to the vulva, from which it is separated by the hymen and vulval ring. It is in great part situated in the pelvic cavity, the curve of which it follows pretty closely, having an oblique direction from above downwards and from behind forwards which crosses the axis of the perineal strait, so that its lower extremity is in a plane anterior to the axis of this strait. It forms, therefore, with the uterus which is placed almost in the direction of the axis of the superior strait, an angle with an anterior sinus corresponding to the bladder and a posterior convexity in relation with the rectum. The aperture of the angle varies according to the vacuity or fulness of the bladder. Its length is from 10 to 12 centimetres, measuring it from the vulval ring; the anterior wall, according to Sappey, is only 75 millimetres, whilst the posterior is 95 millimetres; its width varies according to the individual, the age, virginity, pregnancy, &c. It varies also at different points, being narrow at the vulval orifice and increasing gradually from below upwards or from before backwards as far as the neck of the uterus. The dilated portion which surrounds the cervix is called the *cul-de-sac* or sinus, and is divided into anterior, posterior and lateral; the posterior is the deepest, and often conceals morbid states of the vagina or of the corresponding cervical lip which are both difficult to diagnose and to cure.

When left to themselves the anterior and posterior walls are in immediate contact, so that in place of being cylindrical the vagina, in a state of repose, is really flattened. The anterior surface is in relation with the urethra, and at the base of the bladder with the ureters (Figs. 16, 17, 18); its posterior surface with the perineum, rectum, and with the peritoneum to an extent of from 10 to 15 millimetres (recto-vaginal *cul-de-sac*); its borders with the levator ani muscles (which may combine their action with that of the constrictor), with the perineal or upper pelvic aponeurosis, with abundant adipose cellular tissue, and with the inferior portion of the broad ligaments. Above, the vagina adheres to the neck throughout the extent of the central third of the latter, leaving the posterior lip more exposed than the anterior and the posterior sinus broader than the anterior. Below it terminates in the vulval ring, the elastic tissue of which, with the constrictor and the

bulb, together constitute the narrowest part of the vagina and present a greater obstacle to the introduction of the penis than the hymen, may offer so much resistance during delivery as to require incision, and become the seat of a spasmodic contraction, with or without fissure, similar to that of the anus. To this vulval ring is attached the hymen, apparently formed by the apposition of the vaginal

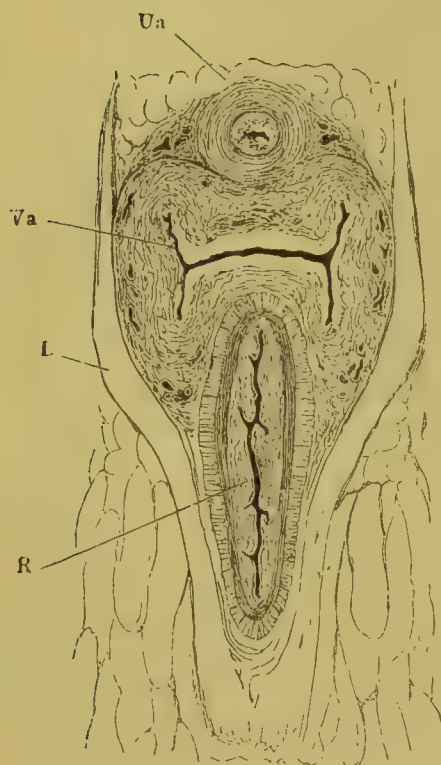


FIG. 46.



FIG. 47.

FIG. 46.—Horizontal section of soft parts on a level with the inferior strait of the vagina, showing its walls in contact. Va, vagina; Ua, urethra; R, rectum and levator ani (after Cruveilhier).

FIG. 47.—B, anterior vaginal wall, the posterior having been removed; Ou, meatus; above, anterior column formed by two enlargements diverging towards the base; Oue, os externum; *, section of the utero-vaginal cul-de-sac.

mucous membrane (intermediary formation) to the vulval mucous membrane (external formation), and which, like all orifices placed on the borders of two different embryogenic fields, may be imperforate. As a rule, the hymen has an annular or semi-lunar form;¹ it is destroyed by coitus, leaving no other trace than the *carunculæ myrtiformes*.²

¹ Roze, *De l'hymen*. Inaugural thesis. Strasbourg, 1865. We shall consider these various anomalies afterwards.

² Puech has seen the singular case of a lady who never had a hymen, and who after delivery had four *carunculæ myrtiformes*.

The internal surface of the vagina is remarkable for the transverse ridges of its mucous membrane known as *rugæ*, which reach their greatest height in the middle portion, where they form on each wall a median projection bearing the name of the column, extending from top to bottom, more prominent on the anterior than on the posterior wall and more marked near the vulval orifice, where it is sometimes double (Fig. 47), than near the uterine insertion, where it almost disappears. These columns and *rugæ*, probably traces of the double vagina, give rise to grooves which become reservoirs for virulent matter and seats of syphilitic or blennorrhagic contagion.

The average thickness of the vaginal walls is from 3 to 4 millimetres. The external coat is fibro-cellular and thin; the middle one is muscular and thick, formed of a superficial layer of longitudinal fibres inserted below into the ischio-pubic rami, above into the utero-sacral ligaments and into the uterus itself, and covers a deep layer of fibres intercrossing obliquely or circularly. The inner coat or mucous membrane, also thick, varying in colour according to age and reflected above on to the vaginal portion of the cervix, is furnished with a great number of papillæ and covered with pavement epithelium, which stops abruptly at the *os externum* and is renewed throughout the whole extent of the mucous membrane with surprising activity in certain pathological conditions accompanied by leucorrhœa.

It is remarkable that the vagina not only is susceptible of great expansion and is dilated during pregnancy and delivery, but that it positively hypertrophies during pregnancy, its tissues sharing with those of the uterus, though to a smaller extent, the property of alternate hypertrophy and atrophy, in order to meet the exigencies of their special functions.

The vagina seems to me to be without secreting organs properly so called. After having passed the vulval ring or circular insertion of the hymen, which is the limit of the richly glandular apparatus of the vulva, we must reach the vaginal surface of the cervix before encountering new secreting organs. The fluid which exudes from the vaginal mucous membrane, carrying with it epithelial *débris*, is always acid. It not only has a strong acid smell, but it powerfully reddens litmus paper.

The *vulva* is limited externally by the *labia majora*, the cutaneous surface of which is covered with hairs implanted obliquely and the mucous surface of which presents the orifices of numerous follicles, as well as several rows of sebaceous glands.¹ Below the skin and superficial fascia is to be found a sac, which is serous, according to Broca,² and fatty according to Alph. Guérin,³ belonging to the *mons veneris* as

¹ According to C. A. Martin and Léger (*Archives générales de Médecine*, 1862) the secreting apparatus of the external genital organs in woman is constituted solely (with the exception of the vulvo-vaginal glands) of sebaceous racemose glands and some sudoriparous glands which are only found on the external or cutaneous surface of the labia. The muciparous follicles of the vestibule of the meatus and of the urethra are only mucous crypts.

² *Bulletin de la Société anatomique*, Mars, 1851. Morpain, *Études anatomiques et pathologiques des grandes lèvres*. Thèse de Paris, 1852, No. 278. He has adopted the ideas of Broca.

³ *Maladies des organes génitaux externes de la femme*, p. 243. Paris, 1864.

much as to the *labia majora*, extending from the external inguinal ring to the level of the descending ramus of the pubis, separated above



FIG. 48.



FIG. 49.



FIG. 50.

FIG. 48.—Transverse and vertical section of the nymphæ,—sebaceous glands (after Cruveilhier).

FIG. 49.—General view of the sebaceous glands of the vulva, under surface natural size (Martin and Léger).

FIG. 50.—Sebaceous glands of the labia majora opening into a hair-sac, 20 diameters (Martin and Léger).

from that of the opposite side by a median sac, really serous, which prevents friction of the skin on the pubis, and not passing beyond the anterior half of the labium majus.

The labia majora in uniting form the anterior commissure, below which is the clitoris. Behind and below they are flattened before uniting to form a posterior commissure, called the *fourchette*. Between the anterior commissure, and especially between the clitoris and the orifice of the vagina, is the *vestibule*. Between the posterior commissure and orifice of the vagina is the *fossa navicularis*. The nymphæ, situated within the labia which they occasionally exceed in their middle portion, are forked before and above, *i. e.* below the anterior commissure, so as to form a kind of hood or foreskin for the clitoris. They enclose a great number of sebaceous glands at this point. They may be so hypertrophied as to exceed the labia majora to a certain extent and become very troublesome under some circumstances, *e. g.* in riding. Both surfaces are covered with mucous membrane, the

internal having an innumerable quantity of little glands, generally arranged in three or four concentric rows.

The *meatus urinarius* is situated $1\frac{1}{2}$ centimetres behind and below the clitoris; in virgins, as a rule, it is a mere slit, but in lascivious women it is open, owing to the erectile turgescence all round the orifice. Sometimes it is half closed by a kind of inferior median ridge continuous with a prominent *inferior tubercle*, occasionally double (Fig. 47), the termination of the anterior column of the vagina and serving as a guide in catheterism. The meatus is generally on a line with the vestibule when it is easily discovered. According to Alph. Guérin, however, in women who have had precocious intercourse the vulva is pushed backwards and the meatus concealed under the symphysis of the pubis. Sometimes the vaginal orifice is gradually dilated without any laceration of the hymen taking place. Generally, however, only traces of this membrane are found after the first coitus. These vestiges are known by the name of *carunculæ myrtiformes*; they vary in number, size, and form, according to the individual conditions and the amount of violence used. There are generally four or five, most frequently one inferior and always two lateral, at the base of which the orifices of Cowper's glands are seen. The secreting organs of the vulva are the sebaceous and piliferous follicles and the muciparous glands. The *sebaceous* and *piliferous follicles* are excessively numerous, and are only observed on the mons, on the labia majora and minora, and in the genito-crural folds. The follicles of the nymphæ are simply sebaceous. The *muciparous glands* are grouped within the nymphæ, nearer the entrance of the vagina. Some, already described by several authors, notably by Régnier de Graaf¹ and more recently by Robert,² have been called by Huguier³ *isolated muciparous follicles*. The others form a true gland, designated by this author as the *vaginal follicular body* or *vulvo-vaginal gland*. The *isolated muciparous follicles* are collected especially at three or four points round the vaginal orifice; at the vestibule, between the clitoris and the urethra (*vestibular follicles*); circularly round the meatus, on the surface of the central tubercle which limits this opening below (*urethral follicles*); at some distance from the meatus and on its sides (*urethro-lateral follicles*); lastly, sometimes on the lateral portions of the vaginal entrance, immediately below the hymen or upper *carunculæ myrtiformes* (*lateral follicles of the vaginal entrance*) (Fig. 51).

The *vulvo-vaginal* glands described by Duverney, Bartholin, Garengeot, Morgagni, Cowper, and lately by Tiedmann⁴ and Huguier⁵ are

¹ *Traité des parties des femmes qui servent à la génération*, p. 120, in *l'Histoire anatomique des parties génitales de l'homme et de la femme*. Bâle, 1649.

² *De l'inflammation des follicules muqueux de la vulve*. Arch. gén. de méd., August, 1841.

³ *Mémoire sur les maladies des appareils sécréteurs des organes génitaux externes de la femme* (Mémoires de l'Académie de médecine, t. xv, p. 527, et seq.).

⁴ Von den Duverney'schen, Bartholin'schen oder Cowper'schen Drüsen des Weibes. Heidelberg, 1840. See also Knox, Lond. Med. Gaz., vol. xxiii.

⁵ Op. cit. Paris, 1841.

conglomerate or racemose glands, situated right and left of the entrance of the vagina, small before puberty, greatly developed in voluptuous

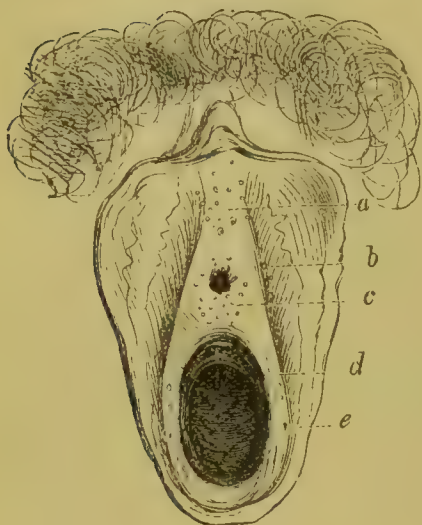


FIG. 51.



FIG. 52.

FIG. 51.—Muciparous follicles of the vulva. *a*, vestibular follicles; *b*, lateral urethral follicles; *c*, central urethral follicles; *d*, lateral follicles of the entrance of the vagina; *e*, orifice of the excretory duct of the vulvo-vaginal gland.

FIG. 52.—Vulvo-vaginal gland and its excretory duct (after Huguier). *a a*, section of the labium and nympha; *b*, the gland; *c*, its excretory duct; *e*, its orifice in the vulvo-caruncular sinus, a director is introduced; *f*, bulb of the vagina; *g*, ischio-pubic ramus.

women, surrounded immediately by a fibro-vascular envelope in relation with the transverse artery of the perineum, placed between the vagina and its bulb (to which they lie close) on the inner side, the ischio-pubic ramus, which is 1 centimetre to the outside, the central aponeurosis of the perineum situated behind and above, and the superficial aponeurosis in front and below. They are bounded on all sides by resistant layers, so that pus formed internally can hardly escape into either the rectum or the vagina nor run together as in abscesses of the labia. The excretory duct, 2 centimetres long, opens at the union of the lower fourth with the upper three-fourths of the vaginal orifice, beyond the hymen or lateral *carunculæ myrtiformes*, at the base of the groove which separates the external surface of these carunculæ from the internal surface of the nymphæ, where it may often be recognised by a red border. Excitation of the clitoris, the corpora cavernosa and the bulb of the vagina greatly increases the secretion of the vulvo-vaginal glands.

The mucus secreted by the follicles and the vulval glands is acid, that which is secreted by the vestibular and peri-urethral follicles has

always seemed to me more acid than that which is secreted by the vulvo-vaginal gland.

DEVELOPMENT—COMPARISON OF THE GENITAL ECONOMY IN THE TWO SEXES

*Development*¹ takes place from different embryonic points, which are more or less independent of each other in their evolution. The external generative organs (the vulva and its dependencies) are developed from *the external layer of the blastoderm*; the internal generative organs arise from *the middle blastodermic layer*. Hence anomalies may be produced in one of these formations to the exclusion of the other. There is even a point of central formation, which is neither the external layer nor the intermediate blastema, but the septum established in the primitive cloaca formed by the rectal *cul-de-sac* and the bladder which has been previously derived from the latter under the form of the hollow pedicle of the allantois; the vagina is developed at this point, which explains a relative independence between the anomalies of this portion of the generative system and those of other parts. In short, each of these portions, especially the internal one, presents in its turn several centres of formation, equally endowed with a relative independence each of the other, and capable of undergoing, each by itself, arrests in development, alterations in type or differences of direction, which multiply the number of anomalies and which may carry dissimilarities in the development of different parts of the same economy as far as that difference of sexual character which constitutes hermaphroditism.

A few words will suffice to explain this. At the beginning the development of the *internal generative organs* takes place around the Wolffian bodies.² These bodies atrophy towards the end of the second month, leaving probably, as traces in the adult, those vestiges of organs in connection with the testicles or ovaries known by the names of *vas aberrans* in the male and the organ of Rosenmüller in the female. Whilst the Wolffian bodies atrophy, new organs are developed in the same region. These are the kidneys, the ovaries or the testicles, the oviducts or the spermatic ducts, &c.

I. Along the inner border of the Wolffian body there is a fusiform enlargement which, increasing gradually in size and diminishing in length, forms the first rudiment of the testicle or ovary. Along its external border, parallel and attached to its excretory duct, but quite

¹ See Küssmaul's work, *Von dem Mangel, Verkümmern und Verdoppelung der Gebärmutter*, Wurtzburg, 1839; as well as the work of M. Lefort, *Des vices de conformation de l'utérus et du vagin*, &c., Paris, 1863, and that of Guyon, *Des vices de conformation de l'urèthre chez l'homme*, Paris, 1863; see also Albers, *Die weibliche Cloakbildung in Monatsschrift für Geburtsk. und Frauenkrankheiten*, Berlin, 1860, Bd. xvi, 4^e Heft; and Kœlliker, *Entwickelungsgeschichte der Menschen und der höheren Thiere*. Leipsig, 1861.

² Föllin, *Recherches sur les corps de Wolff*. Paris, 1850.

independent of the tubes, there is a second organ, at first a simple solid cord, later hollowed into a canal, known by the name of Müller's duct. The excretory canal of the Wolffian body and Müller's duct

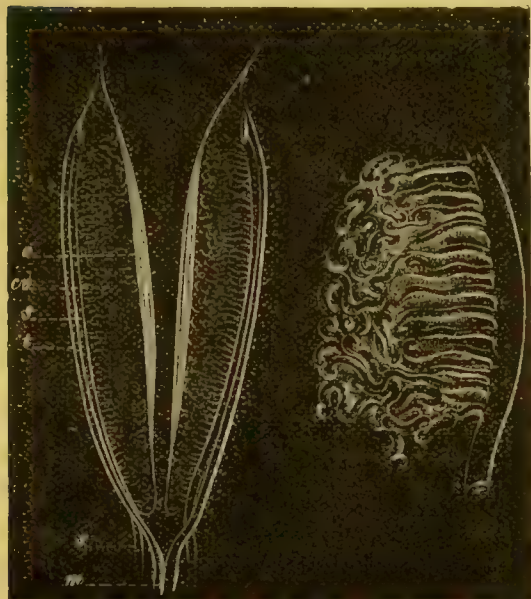


FIG. 53.



FIG. 54.

FIG. 53.—Wolffian body (after Coste). *cv*, Wolffian body; *s*, excretory canal of Wolffian body; *o*, future ovary or testicle; *t*, future oviduct or sperm-duct called Müller's duct; *m*, future uterus; the figure placed alongside shows the glandular structure of these organs.

FIG. 54.—Wolffian body and internal uro-genital system of the human embryo after the fortieth day (after Coste). *cv*, Wolffian body; *o*, ovary or testicle; *s*, excretory canal of Wolffian body; *t*, sperm-duct or oviduct, Müller's duct; *m*, future uterus; *c*, suprarenal capsule; *r*, kidney; *u*, ureter; *v*, bladder; *gi*, large intestine, rectum.

both run into the cloaca. Now, according to Rathke and Kobelt, whilst the sperm-duct is developed from the excretory canal of the Wolffian body, the oviduct proceeds from Müller's duct.

In the first period of intra-uterine life there is a time when distinction of sex is impossible. This confusion is owing to similarity of form, which soon disappears in the internal as well as in the external organs.

If Müller's duct atrophies, Wolff's excretory duct forms a sperm-duct, and is united, by means of tubes afterwards transformed into the epididymis, with the generative organ which becomes the male generative organ or testicle. If Müller's duct is developed it forms an oviduct, develops at its extremity a Fallopian tube, and remains distinct from the generative organ, *i.e.* from the ovary. As for the generative organ, it is united to the sperm-duct by efferent vessels (epididymis), or it remains isolated from Müller's duct, with the exception of the interposition of a certain number of atrophied Wolffian ducts (organ of Rosenmüller), according as it is testicle or ovary.

Thus, the Wolffian body never entirely disappears either in the male or female; its elements atrophy. In the male the remains of its tubes, besides the part which they have taken in the formation of the epididymis, frequently become small epididymous cysts, and form probably the *corpus innominatum* of Giralaldès,¹ the *vasa aberrantia* of

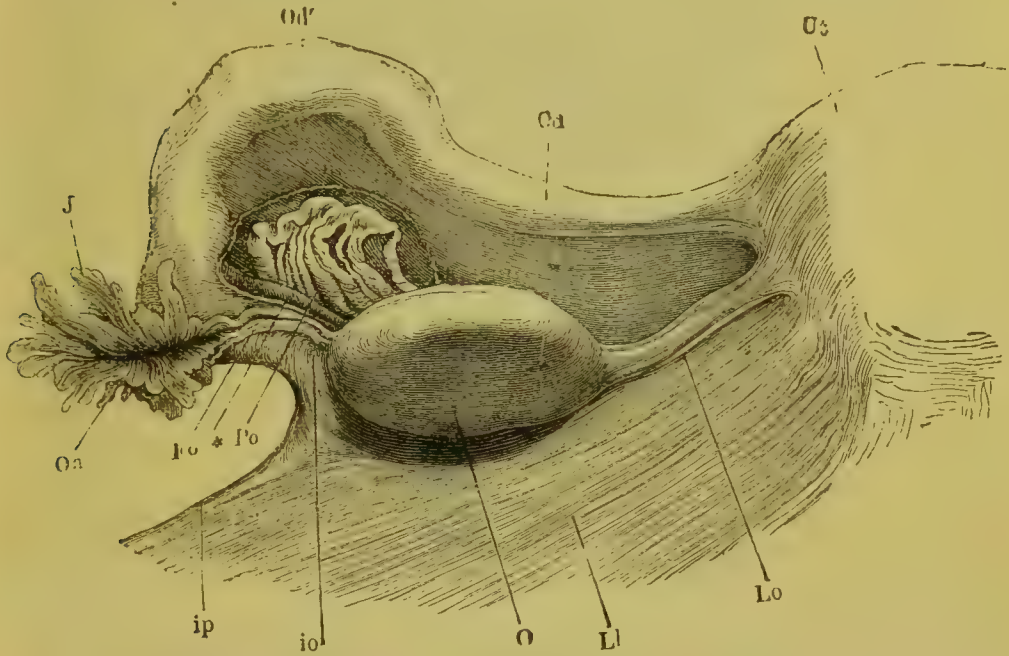


FIG. 55.—Figure showing the organ of Rosenmüller. Superior right angle of the uterus (Ut) and portion of the broad ligament (Ll) with oviduct and ovary, seen from behind; Od, isthmus of the oviduct; Od', largest portion of this canal; J, fimbriated extremity; Oa, abdominal orifice of Fallopian tube; Fo, fimbriæ; O, ovary turned downwards; Lo, ovarian ligament; io, infundibulo-ovarian ligament; ip, infundibulo-pelvic ligament divided at its pelvic insertion; Po, parovarium or organ of Rosenmüller, exposed to view by the ablation of a portion of the posterior fold of the broad ligament; *, vascular branch which follows the border of the ovary.

Haller. In the female the Wolffian body becomes the organ of Rosenmüller, its central tubes end in the hilum of the ovary, the outer ones disappear or atrophy and remain the analogues of the *vasa aberrantia*; the excretory duct of the Wolffian body disappears by atrophy, and is found in this state, in the cow for example, on each side of the uterus as far as the vagina, where it terminates under the name of Gærtner's canal.

Therefore, according to the form of development affected by Müller's ducts or the Wolffian ducts, an oviduct or sperm-duct is produced, and concurrently with it an ovary or testicle. 1. One of these forms of development may appear on one side, whilst another is produced on the opposite side, the result of which would be a lateral hermaphroditism. 2. The two forms of development may appear incompletely and simultaneously on the same side (but much less frequently so, especially

¹ *Recherches anatomiques sur le corps innominé, Journal de Brown-Séguard, t. iv, p. 1.*

as regards the germinative organ), so that on this side there may be produced a testicle and an oviduct or an ovary and a spermiduct, and even a testicle and an ovary superimposed, a phenomenon to which has been given the name of double or vertical hermaphroditism; only we must remember that it is easy to be led into error in this case by the persistence of the Wolffian duct or of Gærtner's canal. 3. Lastly, one of these forms of development may take place in all the deep organs, which will be, for example, all male, whilst the opposite development is effected in the superficial organs which are female, the result of which would be transverse hermaphroditism. As regards this transverse hermaphroditism, the independence of the development of the external and internal generative organs, which are produced in two fields of formation quite different from each other, shows that it may occur comparatively frequently.¹

Now, in order to understand how Müller's ducts when transformed into oviducts, are developed into Fallopian tubes and uterus, and how the continuity of these organs is established with the vagina and external generative system, we must remember that development proceeds simultaneously on the intermediate blastema and on the internal and external layers of the blastoderm.

On the internal layer this development takes place early. The allantois produced by budding from the anterior surface of the rectal *cul-de-sac* continues attached to the rectum by its pedicle. This pedicle is hollowed out into a canal (urachus), which widens at its point of origin in the rectum into a reservoir (the bladder); so that at this period the bladder and rectum form a true cloaca in which the genito-urinary canals terminate, similar to that on the exterior which precedes the formation of the anus and urogenital orifice. In proportion as the uterus is formed by the apposition of Müller's ducts the cloaca is divided, allowing the formation of the vagina either in the blastema interposed by this division between the bladder and the rectum, as is supposed by Rathke who thinks the lower part of the uterus is developed in the same way or by the prolongation of Müller's two ducts, which themselves form a double vagina below a double uterus.

I think the most probable hypothesis to be that which limits to the uterine cervix the formations depending on Müller's ducts, and which supposes the vagina to be developed from the tissue the interposition of which between the rectum and the bladder has previously effected the separation of these two reservoirs, or in its lateral borders. I will give my reasons presently.

However that may be, we can in any case say with certainty that Müller's ducts, during the development of their lower portion whilst approaching each other and in proportion as they descend, pass through three periods characterised by—1, complete separation and division; 2, reunion in the median line; 3, complete fusion.

Running along the external border of the excretory canal of the Wolffian body, Müller's duct changes its direction lower down and

¹ Geoffroy Saint-Hilaire, *Traité de tératologie*. Paris, 1836; L. Lefort, *op. cit.*, p. 174.

describes a half circle round this canal, coming in front and to the inner side of it to meet its fellow of the opposite side to which it becomes attached and united in the median line.

J. F. Meckel observed, in embryos of from eight to nine weeks, absolute equality in calibre and the absence of any line of demarca-



FIG. 56.—Development of the internal genito-urinary organs in a human embryo older than the preceding (after Coste). *c*, suprarenal capsules; *r*, kidneys; *o*, ovaries; *u*, ureters; *t*, Fallopian tubes; *m*, uterus; *lr*, round ligament; *v*, bladder.

tion between the rudimentary oviduct, uterus, and vagina. According to Küssmaul, however, at about three months the womb can easily be distinguished from the vagina by a somewhat greater thickness and consistency; the very fine oviducts begin to become flexuous, and are about a third longer than the corresponding uterine cornu. The separation between the oviduct proper and the uterine cornu is marked by the insertion of a fibro-muscular cord, afterwards to be known as the round ligament. Meckel justly compares this organ to the suspensory ligament of the testicle (*gubernaculum testis* of Hunter). Wrisberg designates it the cremaster of the womb, and Rathke confirms the analogy by the study of its development in the embryo.

Between the testicle or ovary on one side and the pubis on the other extends on each side a kind of ligament, destined to become more or less muscular, having connections with the inguinal canal, the scrotum or labium. The presence of this organ determines, in the scrotum or labium, the peritoneal prolongation known as the *tunica vaginalis* in man, canal of Nuck in woman, the obliteration of which takes place after birth, partially in the one, completely in the other. Its ulterior changes bear a relation to the displacements of the testicle and ovary. The testicle, descending into the scrotum, pushes before it the gubernaculum which covers it and which is transformed principally into the cremaster; the ovary, descending only into the

pelvic cavity, preserves its relations with this organ which, adhering to the oviduct at its point of intersection with this canal and there modifying the direction or the number of its contractile fibres, becomes the uterine ligament of the ovary in its upper portion and the round ligament of the uterus in its lower portion. The portion of the oviduct placed above it forms the Fallopian tube, that below it the womb. The two uteri are recognisable for a long time after their union by the projection of the cornua of which the Fallopian tubes are a continuation. Gradually the fundus rises slightly between these two cornua but for a long time without the organ losing the traces of its primitive duplicity. The womb at the same time becomes more voluminous, more cylindrical, and the body may be distinguished by the enlargement of the upper part. This portion, however, remains in a state of comparative inferiority; for, owing to the length of the neck, it does not reach the third of the total length of the organ in a fœtus at term.

To sum up: two cords at first solid (Müller's ducts), separated above by the width of the vertebral column and of the Wolffian body, are united below back to back. The part situated above the point of union and Hunter's ligament will form the Fallopian tube, the part below will constitute the uterus. Each of these cords is hollowed into a distinct cavity, then the partition separating the two disappears from above downwards, and the uterine canal, at first double, becomes finally single.

II. Between the internal generative economy, the development of which we know, and the external generative economy, the formation of which we shall presently study, there is an *organ of transmission*, the vagina, intermediate in function as in position. The notions which we have as to its evolution are somewhat hypothetical, for they are deduced partly from direct observation by embryology, partly from indirect observation by teratology. We have seen that, within the external fold of the blastoderm while still imperforate, there is a true cloaca or cavity common to several hollow organs. This cloaca is the termination at first of the rectum behind, then of the bladder (dilatation of the hollow pedicle of the allantois) before, and finally of the excretory canals of the Wolffian bodies, of Müller's ducts and of the ureters laterally. The communication between the rectum and bladder is limited above by a band or elevation, indistinct at first, but which, becoming more and more marked, descends from above downwards under the form of a flattened membrane, and gradually separates the intestinal cavity completely from the reservoir of the urine.

It is in the central blastema forming the division between these two reservoirs that the vagina is soon afterwards developed; it has not been determined whether it is developed from above downwards or from below upwards, but it is certainly produced from two lateral canals, communicating above with the uterine necks (the probable termination of Müller's ducts) and below with the vulva where may be found a double hymeneal orifice, and destined, like several other pairs of organs, to unite together, the absorption of the partition reducing them

to a single canal extending from the uterine orifice (which has also become single) to the vulval ring developed in the midst of the cutaneous formations.

Now, if the membranous band destined to separate the rectum from the bladder is not formed, an abnormal communication¹ (cloaca) will persist between the two organs. If formed incompletely and hollowed into a vagina, a double communication will remain, giving rise to a double congenital fistula (vagino-vesical and vagino-rectal). If the vesico-rectal septum is formed but not hollowed out, there will be no vagina; if hollowed out imperfectly, there will be a partial vagina; the superior or inferior portion may be in turn alone developed, or two parts may exist simultaneously, the one superior, the other inferior, between which there may be at a variable height, a transverse partition, thick or thin, imperforate or perforate. Lastly, if the primitive double vagina is developed normally in the vesico-rectal septum, but if the development is arrested there, a double vagina will persist, co-existing or not with a similar arrest of development in the uterus. If the two canals are united incompletely the malformation will be limited to a partial longitudinal partition between the right and left portions of the vagina; if the union is complete, but if the cavity has not enlarged to its normal extent, there will be a congenital narrowness.

III. *The external generative economy* does not begin to be developed till after the first formations of the internal generative organs, particularly the Wolffian bodies. In an embryo of thirty-five days an accumulation of blastema may be seen on the external tegument near the caudal extremity. The result is a simple oval, central eminence, from which afterwards a secondary formation of buds is seen to arise, destined to form a series of appendages. This eminence is soon hollowed out in the centre by a longitudinal depression which, by corrosion of the tegumentary fold, soon becomes an external linear orifice, getting deeper and deeper and terminating (when evolution progresses regularly) by communicating with the cloaca of which we have spoken and afterwards with the vesical, vaginal and rectal cavities which finally become distinct and independent. Later on two rounded eminences are developed from each side and towards the upper part of this slit, destined to form the *corpora cavernosa* of the penis in the male, the clitoris and nymphæ in the female. They are united at first by their upper or dorsal surface, leaving a lower half-groove between the opposed surfaces. This half-groove persists in the formation of the female economy; in that of the male it is closed below by a kind of raphe, which converts the primitive half-canal into a complete one, the urethra. The malformation known as *hypospadias* results from the arrest of development in this line of union.

Below these eminences two others are developed, which in the male form the scrotum, in the female the labia. Lastly, a transverse partition is developed lower down, which ultimately becomes the perineum separating the anus from the vulva.

¹ Puech has written a good paper on the uro-genital cloaca. *Montpellier Medical*, Jan. and Feb., 1868.

It is by the disappearance of the tissue situated between the rectal *cul-de-sac*, the vagina, and the bladder on one side, and the external integument on the other, that the three cavities—intestinal, genital

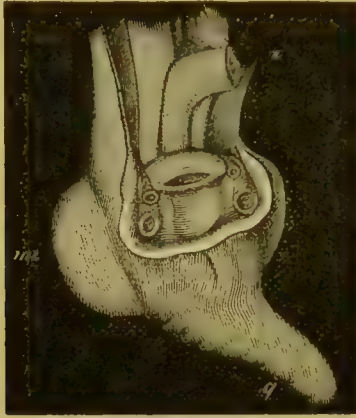


FIG. 57.—Development of the anus and external genital organs in a human embryo of thirty-five days (after Coste). *i*, intestine, on the sides of which two white masses are seen (Wolffian bodies); below is the section of the urachus and umbilical arteries and veins; lower still, the cutaneous fold slightly turned back over the ano-genital orifice. The latter consists in a simple slit in the centre of an ovular eminence. *m i*, inferior membrane; *q*, caudal prolongation.

and urinary—open externally. If this development does not proceed regularly and completely on a level with the anal depression, the rectal *cul-de-sac* will not open, and there will be an imperforate rectum. When an analogous phenomenon occurs in the vaginal portion, there will be a more or less extensive obliteration of that part of the vagina which joins the vulval ring or simple imperforation of the hymen.

Comparison of the generative organs in the two sexes.—The reader would wish me, I think, to follow up the description of the development of the uterus and its appendages by some observations on the independence of the different zones in which the genital economy is developed, and on the analogies between the different parts of this economy in the male and female. These considerations may not only throw some light on the diagnosis of sexual anomalies in general, and help in determining particular cases, but they may also lead to more frequent and immediate applications to the various morbid states of the genital organs than one would at first be apt to think.

The direct observation of the development of the embryo shows that the genital economy may be divided into three zones, which must be considered as three distinct seats of organic evolution, each developed independently of the others, and tending to produce one system destined for the accomplishment of a single function. Of these three zones the two outer are principal, the middle or intermediate one is secondary. The former are the internal and external genital organs, the latter is the means of union between the two.

The middle zone is simple: the vagina is developed between the

vulval ring belonging to the external zone and the neck of the uterus belonging to the internal zone, almost in the same way that the œsophagus is developed between the *cul-de-sac* of the stomach pierced by the cardiac orifice and the cephalic *cul-de-sac* developed into the buccal



FIG. 58.

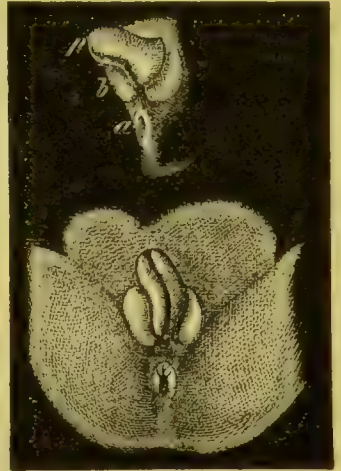


FIG. 59.

FIG. 58.—Development of the anus and external genital organs in a human embryo of from thirty-five to forty days (after Coste). *o*, urachus and pedicle of the umbilical vesicle, the umbilical vessels of each side; *c*, cutaneous fold of the umbilical cord wide open; *i*, intestine; *g*, central projection produced by the development of the genital economy. If this projection is seen in front, as in the annexed figure, two lateral eminences will be observed above, the origin of the future *corpora cavernosa*; below, two smaller eminences, the origin of the future scrotum or labia. On the median line above, a slit between the points of origin of the corpus cavernosum; lower down, an opening, the uro-genital orifice; lower still, a second opening, the anus.

FIG. 59.—Development of the external genital organs in an embryo a little older than the preceding, the sex of which, however, cannot yet be distinguished. *p*, corpus cavernosum (penis or clitoris), below which runs a central groove terminating in the uro-genital orifice; *b*, scrotum or labia not yet united in the median line; *a*, anus.

and pharyngeal cavity. The external zone is complex, but this complexity depends only on its structure, and not on the difference of the seats of evolution, its whole development being effected at one and the same point in the embryo. The internal zone is more complicated still, for the character of this complication exists in the multiplicity of the centres of formation, the ovaries being developed along the internal border of the Wolffian bodies, whilst the Fallopian tubes and the uterine cornua are formed along their external border, the Fallopian tubes above, the cornua below the point where the oviduct, considered as a whole, crosses Hunter's ligament.

These various centres of formation are precisely the points at which development may be arrested separately, or where a deviation of the plastic act may be manifested. Therefore the anomaly may affect the ovary, Fallopian tube or cornu on both sides or on one. It may extend to several of these organs at once. The whole internal zone may be affected or the intermediate or external one. The two former

zones may even be affected to the exclusion of the third, or the latter may alone be affected; for the two former are situated in the blastema between the serous and mucous folds, and the third in the serous fold transformed into the cutaneous envelope. Now, my teratological studies have led me to consider these primordial embryonic folds as seats in which very frequently the action of the cause which brings about an arrest of development is exhausted; between these points there seem to be limits which cannot be passed by any known teratological cause.¹

As for the analogies which embryology, in concert with relations, connections, structure, vascularisation, innervation and functions, permits us to establish between the various portions of the genital economy, male and female,² I shall confine myself to their enumeration.

In the external economy the analogy is striking between—

The scrotum	and the labia majora,
The penis	„ „ clitoris,
The bulb of the urethra	„ „ bulb of the vagina,
The glands of the urethra	„ those of the vulva,
Cowper's (bulbo-urethral) glands	„ Bartholin's (bulbo-vulval).

In the internal economy it is easily demonstrated between—

The testicles	and the ovaries,
The cremasters	„ „ round ligaments,
The vasa deferentia	„ „ Fallopian tubes,
The lower extremity of the vasa deferentia and their vesiculæ seminales	{ The body of the uterus, with the glands of its mucous membrane and its muscular richness.
The ejaculatory ducts opening on the verumontanum, separated by the utriculus and surrounded by the prostate	{ and the cervix uteri, conical, and surrounded by its glandular agglomeration.

Lastly, the intermediary organ is represented by—

The membranous portion of the urethra in man	{ and the vagina in woman.
--	----------------------------

This last analogy may seem strange without a little reflection. It is, however, easily justified. The vagina, in fact, is developed in the blastema between the rectum and bladder immediately above the central perineal aponeurosis, by the formation, in the vesico-rectal partition, of a canal which goes to meet the vulval slit on the one side

¹ *Mémoire sur l'absence complète du vagin, de l'utérus, des trompes et des ovaires, &c.*, with remarks on the absence or arrest of development of the various parts of the genital economy of the female and general considerations on teratological laws; in the *Mémoires de l'Académie des sciences et lettres de Montpellier*, t. ii, p. 321. Montpellier, 1853.

² It is curious and very interesting to pursue these researches on the analogy between the various parts of the vascular system, the nerves, muscles, aponeuroses and glands, and to verify the wonderful concordance existing between the elements which correspond in the male and female.

and the cervix on the other. It is identically at the same point and in the same way that the membranous portion of the urethra in man is formed, in front of the urethral crest (junction of the two sperm ducts), behind the groove of the penis which is soon converted into a canal by an inferior line of union extending to the bulb where is also found a falciform fold, the boundary line between cutaneous and intermediary formations, and where, when catheterism is practised on the male, the catheter is frequently arrested before penetrating the membranous portion.

A consequence which results from the latter analogy seems, at first sight, very paradoxical, namely, that in man there is no proper urethral canal whilst there is one in woman. In man, the canal by which the urine flows from the bladder is nothing but the analogue of the vaginovulval canal in woman developed in another way and put to other uses. In man, the urinary passages properly so called terminate at the neck of the bladder. The canal into which they open belongs, by its origin and destination, to the genital economy. It is certainly, and above all, the propulsor of the semen. *It only lends itself* to the excretion of the urine which passes through it from one end to the other, traversing successively its prostatic (cervix), membranous (vagina), and bulbo-spongiose (vestibule) portions—a new proof of the differences of structure or of destination which nature can imprint on organs fundamentally identical.¹

The aim of such research after analogies leading to such results is chiefly to satisfy the mind and to lead it to the philosophy of science; it may, however, also lead to some practical applications. The physiologist does not undertake the study of organic analogies because he desires to force a resemblance between dissimilar organs, but because it is interesting to observe how these various parts are gradually formed and differentiated from each other, although their embryonic identity was such that it was impossible to predict their future condition; also, because the knowledge of these analogies leads to unexpected anatomical and physiological interpretations stamped with the most living reality; and lastly, because exact and useful resemblances may be deduced from a pathological point of view between organs proved to be anatomically analogous.

ANOMALIES

The majority of permanent teratological conditions in the genital, as in all the other organs of the economy, represent transitory embry-

¹ In 1849 I pointed out all these analogies, developing them in a paper entitled, *Des différences que présente l'organisation du corps humain dans les deux sexes*, which was published in the *Annales cliniques de Montpellier*, 1855. My colleague and friend, Professor Rouget, had on his side been led to adopt similar conclusions, especially with reference to the cervix and prostatic portion of the urethra. See his *Recherches sur le type des organes génitaux et de leurs appareils musculaires*. Paris, 1855.

onic states. Foerster,¹ Küssmaul,² Léon Lefort,³ and Klob⁴ have based the natural classifications which they have made of these malformations on this idea. This scientific interest, however, is not the only one which leads us to say a few words on the anomalies of the genital economy of woman. The cases of vaginismus, impotence, dysmenorrhœa, and sterility, which are simply dependent on a teratological condition of the genital organs, are so common that every day in practice we have additional proof of the necessity there is for the physician to know exactly the normal disposition of the sexual organs, what I may call their physiological form, so as to be able to distinguish it without difficulty from the alterations in form, size, situation and relations which suffice to prevent the accomplishment of their functions, and to seize easily the indications that must be fulfilled in order to correct these anomalies and bring them back to their normal conditions or conditions resembling their normal development. With a little experience we can often guess at the existence of these monstrosities by subjective signs and, if the development of the sexual economy and the arrests of development to which it is exposed are present to the mind, we can easily diagnose them by the objective signs which are detected by methodical examination.

In giving a *teratological description of the various zones of the genital economy in woman*, I shall omit a multitude of facts which are only interesting as mechanical causes of more or less serious derangements in the accomplishment of their functions, while I shall place in the hand of the physician a clue which will enable him easily to find his way through the labyrinth of anomalies which suffice to produce the most serious functional disorders and become the starting-point of diseases the real cause of which was for long, and is even now, too frequently misunderstood.

I. *General Anomalies of the Generative System*

These anomalies may be characterised by an absence or imperfection of formation, by an excess of development, or by a defect or deviation of the plastic process. The first kind is equivalent to absence of sex or neutrality in the individual, the second to real hermaphrodism by substitution or excess, the third to an apparent hermaphrodism.

1. *Neutrality*.—There may be absence, rudimentary state, imperfection or arrest of development with persistence of the embryonic form of all the organs constituting the three zones of the generative system, or of all the organs of one of the three zones, or of some, or of even one only of these organs, the consequence of which is a condition which makes it impossible for the individual to accomplish functions devolving on organs which do not exist, and which is equivalent to the

¹ *Manuel d'anatomie pathologique*, translated by Kaula, p. 440. Strasbourg, 1853.

² *Von dem Mangel, Verkümmern u. Verdoppelung der Gebärmutter*. Würzburg, 1859.

³ *Des vices de conformation de l'utérus et du vagin*, p. 23 and following. Paris, 1863.

⁴ *Pathologische Anatomie der weiblichen Sexualorganen*. Vienna, 1864.

absolute privation of sex, assimilating the woman so affected to those females amongst insects (bees, ants, &c.) designated as *neuters*, owing to the absence, rudimentary condition or congenital atrophy of their sexual economy. This condition may produce incapacity for reproduction owing to the absence of germination, and the impossibility of forming a germ or ovule, or it may lead to relative impotence owing to the difficulty or obstacles, sometimes quite insurmountable, which alterations in form and position of the organs produced by these arrests of development put in the way of coitus, of the subsequent meeting of the male and female element, and of fecundation; or lastly, there may be generative impotence, impossibility of fecundation and incapacity for gestation, owing to the absence of the uterus itself. I have seen individuals inscribed in the civil register as women, some of them having the marks of a feminine organisation, but in whom the generative functions, by an arrest of development affecting part or the whole of the sexual economy, were so annihilated as to assimilate them to those animals known as *neuters*. As one of many interesting cases of this kind which I have seen and have been able to examine, there was one on which I had to give an opinion based on subjective signs alone (the subject refusing to be examined) taken from what the patient herself said and from the testimony of persons who knew her. I found in these signs proofs which enabled the tribunals to declare nullity of marriage on the ground of error as to the sex of one of the parties.¹

2. *True hermaphroditism*, common in the lower animals and in almost all vegetables (under the name of gynandry or androgyny), was till lately believed to be only apparent in the human kind.

Two cases, however, are now recorded, one by Rokitansky and another by Heppner, which prove to a certainty that the simultaneous presence of organs characteristic of both sexes may be found in the same individual, not only the one on one side the other on the other, but both simultaneously on the same side.

There is no longer any doubt either as to the mode in which the testicle and ovary, sperm duct and oviduct, are formed. Rokitansky,² in 1869, presented to the Medical Society in Vienna the results of the autopsy of a person named Hoffmann, in whom he found two ovaries with their Fallopian tubes, a rudimentary uterus and one testicle with vas deferens containing spermatozoa. This individual, who had menstruated regularly, had an imperforate penis and a bifid scrotum; there was absolute sexual indifference.

Heppner,³ of St. Petersburg, has published the interesting results

¹ Courty, *Demande en nullité de mariage, fondée sur le défaut de caractères sexuels féminins; consultation médico-légale et considérants du jugement*. Montpellier médical, t. xxviii, p. 473; Montpellier, 1872; and *Annales de Gynécologie*, t. ii, pp. 325, 410. Paris, 1874.

² *Centralblatt für die medicinische Wissenschaften*, Berlin, *Union médicale*, 3rd series, t. vi, p. 498. Quoted by Maurice Laugier, *Nouveau dictionnaire de médecine et de chirurgie pratique*, t. xvii, p. 505.

³ *Sur l'hermaphroditisme vrai dans l'espèce humaine*, trad. par Doumic, *Gazette médicale de Paris*, 1872, p. 29.

of the autopsy of a hermaphrodite of six weeks, preserved in alcohol for several years. He found in this child, together with a complete internal generative apparatus (ovaries and Fallopian tubes, uterus and vagina opening into the urethra), two glands which microscopical examination proved most clearly to be two testicles. There was a penis and a hypospadiac prostate, but neither *vesiculæ seminales* nor vasa deferentia. Thus there may be excess of formation, not in the external and median zones which are never double and in which a male development can only be substituted for a female, or *vice versâ*, but in the inner or deep zone, where the male and female generative organs may exist simultaneously, not only the one to the right and the other to the left, but both on the same side and even both on both sides, which is the extreme case of bi-sexual hermaphroditism, or hermaphroditism by excess. In most cases, in place of finding male and female organs on both sides or on one side, we observe male organs on one side and female organs on the other, or male organs in one of the zones, or in a part of one of the zones, and female organs in another,

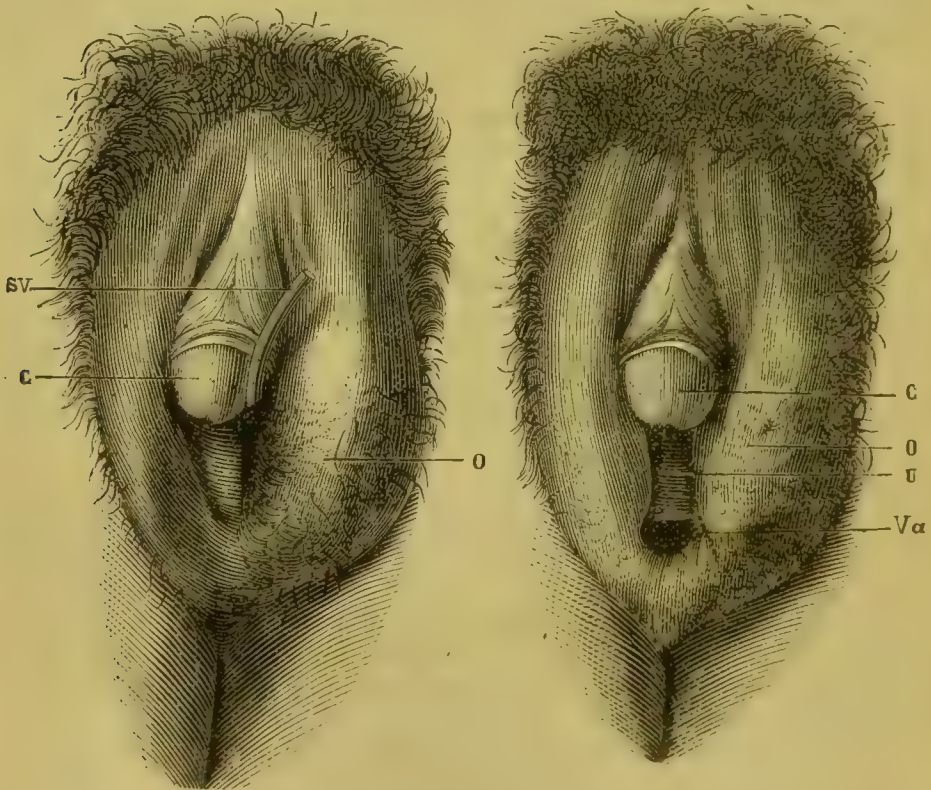


FIG. 60.—Apparent female hermaphroditism owing to the abnormal development of the clitoris, obliteration of the vagina and descent of the ovary into the labium (after Anger). The first fig. represents the hermaphroditism before the operation; the second after. c, clitoris; sv, sound in the vulval orifice; o, ovary; u, urethra; Va, vagina formed by operation.

or in a part of another zone. When a more or less complete male organism on the one side co-exists with a more or less complete female

organism on the other, this anomaly is called *lateral hermaphroditism*. When the genital economy of one sex is developed on both sides in one of the zones, and the genital economy of the other sex in another zone, this anomaly is called *transverse hermaphroditism*. Lastly, when there is co-existence on one side only of an organ of one sex in one of the zones with an organ of the other sex in the same zone, or if the deep zone belong to one sex and the central or superficial zone to the other (case included in the preceding), it is called *vertical or double hermaphroditism*.

True hermaphroditism, therefore, may be simple or double, unilateral or bilateral. From a physiological point of view it will be seen that it is not possible for a hermaphrodite to effect self-fecundation nor to assume the sexual functions of both sexes alternately with another hermaphrodite, as do the lower animals when similarly organised; in fact, this apparent wealth is in reality poverty. When there is an excess of organs in any individual this excess always coincides with a

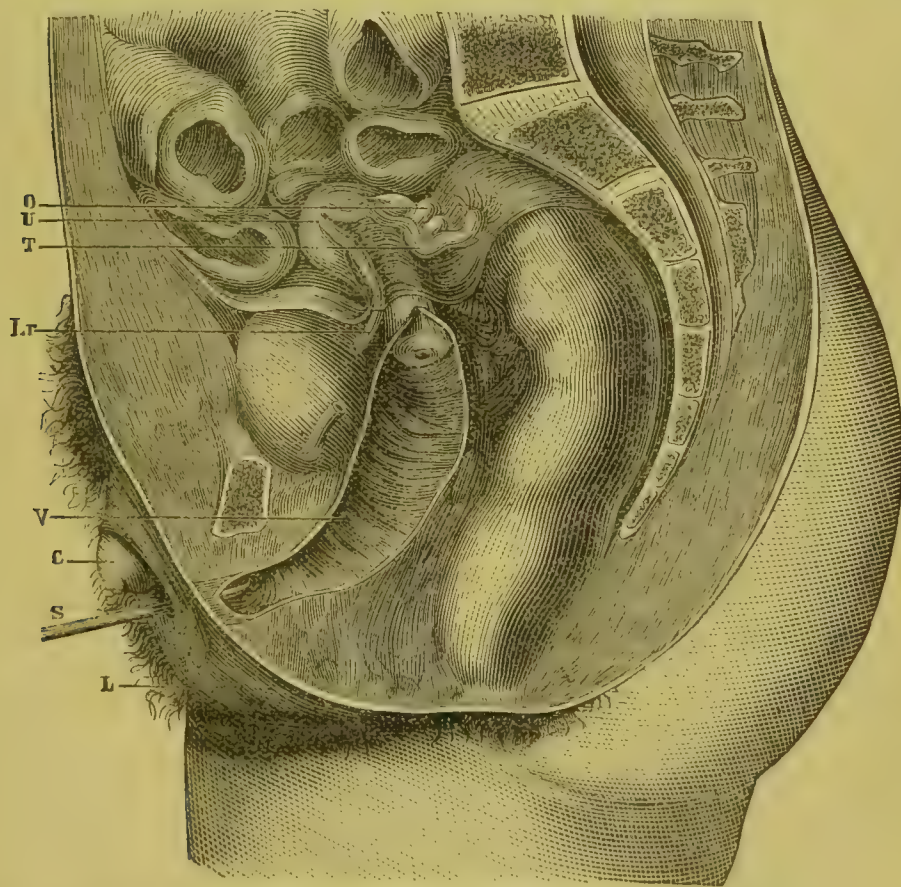


FIG. 61.—Marie-Magdeleine Lefort. Section of the pelvis showing the genital organs. s, sound passing through the principal orifice below the clitoris; v, vagina; o, ovary; t, Fallopian tube; u, uterus; Lr, round ligament; c, clitoris; L, labia.

defect, an imperfection or an absence of formation in these organs. The arrest of development which always accompanies these singular

anomalies affects not only the additional organs, but also the organs of the primitive or fundamental sex—all the organs, in fact, in the zone in which the teratological condition is manifested, and frequently those in the other zones also.

3. *Apparent hermaphroditism*.—In most cases the hermaphroditism is apparent. If the testicles have not descended from the abdominal cavity, if the penis has remained small, the two halves of the scrotum separated, the bulbo-spongiose groove open and communicating directly with the membranous portion, and if the urethra terminates in hypospadias, the cryptorchis, the species of vagina of the intermediary zone, and the arrest of development in the external zone which preserves the appearance of a vulva, concur in giving to the whole of this sexual organism a feminine aspect. If, on the contrary, the ovaries have descended by the inguinal canal, as has been the case, if the bulbo-cavernous groove be closed, the labia united, the clitoris hypertrophied, the beard developed and the breasts arrested in their development, the woman in many respects will have the appearance of a man (Figs. 60 and 61). Lastly, while certain organs have preserved a feminine appearance, others by union and hypertrophy may have assumed a masculine character, so that the most unexpected results of apparent hermaphroditism may be presented, making the determination of sex a matter of great difficulty. This is seen in the history of a certain number of so-called hermaphrodites recorded in the archives of science, among others in that of *Marie-Magdeleine Lefort* (Fig. 61).

The reflections suggested by the knowledge of these general anomalies will naturally find their place in the history of sterility, which is the usual consequence of these teratological conditions.

II.—*Anomalies of the Ovaries*

Absence.—Of all the anomalies of the generative organs the absence of both ovaries is not only that which occurs most rarely, but also that which is most frequently accompanied by other anomalies of other portions of the generative system.

In two thirds of the cases in which absence of the ovaries has been observed the vagina, uterus and Fallopian tubes were also absent; in the remaining third the uterus existed but was imperfectly developed, presenting after puberty the characteristics of foetal or infantile life. A case recorded by Depaul is the only one which leaves any doubts as to this.

Notwithstanding what has been said by Scanzoni this anomaly is not marked by external signs: there is no example of the chin being covered by a beard or the voice being rough and masculine. It is not correct either to say that the breasts are rudimentary, although Busch and Cripps have observed one case of arrested development; they were of the usual size in seven other cases. The absence of symptoms indicating ovulation, with the existence of concomitant anomalies in the uterus and vagina, are the only grounds we can have during life for diagnosing or rather presuming on the existence of this anomaly. At other times the absence occurs only on one side, generally on the left;

in this case the uterus has usually, if not always, but one cornu (Fig. 62), the horn corresponding to the missing ovary being also absent or reduced to a cord. In twelve cases of this anomaly the ovarian function was exercised normally, with regular menstruation, pregnancies and children of both sexes.

Rudimentary development.—Two features characterise this anomaly, which is much more frequent than absence of the ovaries:—1. The small size of the organ. 2. The absence of Graafian vesicles at maturity. From a physiological as well as from an anatomical point of view two forms may be distinguished; in the first the organ is in outline and its structure incomplete; in the second it has the fœtal organisation, *i.e.* the form, size, and vesicles proper to that age. These two forms occur sometimes with a normal conformation of the uterus, sometimes with an anomaly of this organ. The anomalies

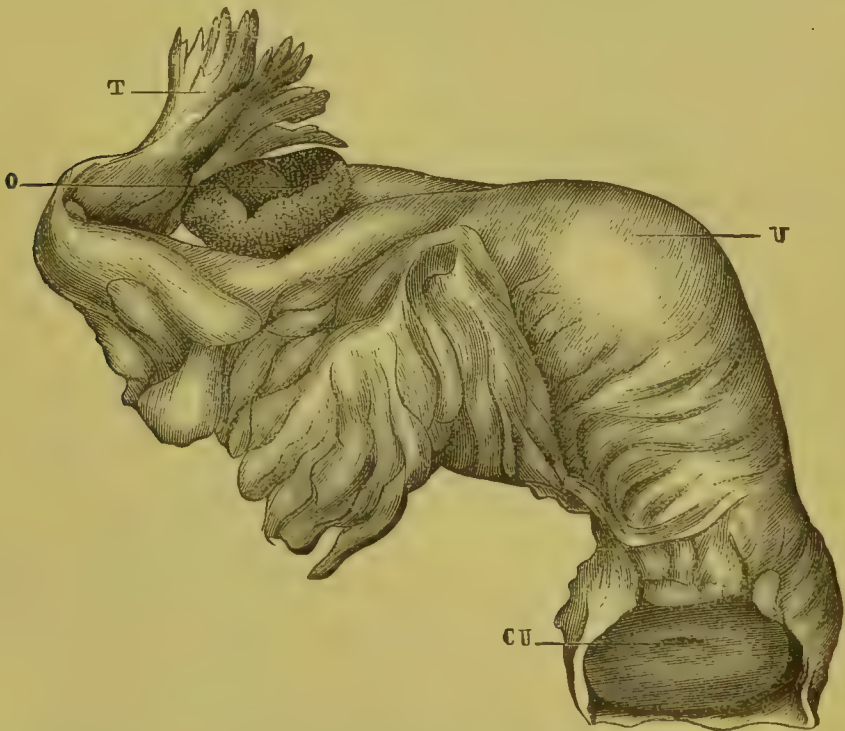


FIG. 62.—Left unicorn uterus, absence of the broad ligament, right ovary and Fallopian tube. *CU*, cervix uteri; *O*, left ovary; *T*, left Fallopian tube, fimbriated extremity. The right border of the rounded uterus (*U*) is covered with peritoneum (Klebs, *Handbuch der pathologischen Anatomie*. Berlin, 1873, 4^e Lieferung, S. 761.)

with which they are most frequently seen to coincide are complete absence of the uterus, apparent absence of this organ, infantile uterus and hermaphroditism. Rudimentary ovaries, though rarely, do sometimes coexist with a uterus normally formed. In a preparation in the Heidelberg Museum, described by Küssmaul, a rudimentary state of the ovaries is seen in a woman whose uterus is 5 centimetres long and $3\frac{1}{2}$ broad; the vagina is replaced by a fibrous cord $3\frac{1}{2}$ centimetres in length and 2 lines in width, and presenting no trace of a canal, except

in the upper part. Roubaud, in an analogous case, observed that all the other genital organs were normal.

At other times only one of these organs is in a rudimentary condition, either when the corresponding uterine horn is atrophied (Granville, Mayer of Friburg, Stolz, Forster, Rosenburger and others), or when it is normally developed (Morgagni, Behling, Lallemand, Blot, Scanzoni, Forster). The rudimentary condition of the two ovaries produces the same consequences as the absence of these organs; when only one is atrophied menstruation and fecundation take place as usual.

Division.—Without referring to varieties of form and size which do not hinder function, we shall only mention the depressions and notches which these organs sometimes present in their borders, in adults as well as in infants. Sometimes single, sometimes multiple (from three to six), these notches are generally superficial. At other times the notch is much deeper and accompanied by a considerable separation of the borders, so that in place of a slit the ovary is really divided into two segments. Klebs and Gintrac have seen cases where the two segments of the ovary were united by a kind of isthmus. F. Winckel, in his plates, represents an ovary divided into two almost equal parts, on one of which an accessory ovary is seen retained by a peritoneal fold and having a Graafian follicle; a similar accessory ovary, also furnished with a serous pedicle and with a Graafian vesicle, is represented in another plate. Beigel has met with this anomaly eight times in 350 autopsies and Winckel eighteen times in 500. In fact, the ovary may be composed of two parts entirely separated, as was proved by the preparation presented by Grohe, in 1863, to the Congress of Stettin;¹ the right one was normal and well developed, whilst on the left there were two small ovaries, one of which was suspended to the uterus, as usual, by the ligament belonging to it, the other, situated farther off, was enclosed in a peritoneal fold. The woman to whom these ovaries had belonged had had three children, and the three ovaries had all performed their function, as the autopsy showed.

Ectopias.—There are two kinds—lumbar and abdominal or inguinal. The lumbar ectopias described by Puech (1855)² are arrests of migration, occurring from the eighth to the tenth week of embryonic life, *i. e.* when these organs, as well as the Fallopian tubes, occupy the lumbar region normally. In the cases quoted the ovary and the Fallopian tube were not in any way attached to the uterus; in one the latter organ was absent; in the other only the right horn was

¹ *Monatsschrift für Geburtskünd, &c.*, 1864, Bd. xx, p. 67. Since then, in 1864, Klebs observed three ovaries in one woman. De Sinety and Olshausen have published analogous cases, but the most remarkable has been drawn by Winckel (*Die Pathologie der Weiblichen Sexualorganen in Lichtdruckabbildungen, &c.* Leipzig, 1872). There were three ovaries and three ovarian ligaments. The third ovary and its ligament were on the anterior surface of the uterus, touching the fundus of the bladder, without any peritoneal inflammatory adhesion. It was found in a woman of seventy-seven who, although married, had never had a child.

² *Compte rendu de l'Acad. des sciences*, 22 octobre, 1855.

wanting. Inguinal ectopias, which are much more common, may be considered, on the contrary, as excesses of migration, having for principal agents the various elements which concur in the constitution of the round ligament. The smooth muscular fibres and those with transverse striæ coming from the abdominal muscles then intervene and, acting in the manner of the *gubernaculum testis*, drag the Fallopian tube and ovary after the round ligament. May not the non-adherence of this ligament to the oviduct where it joins the uterine horn, favour this displacement? The canal of Nuck, which has its maximum of development from the fourth to the sixth month of intra-uterine life, contains these organs at that time, and the descent is completed by the retraction of the elements of the round ligament. The ovaries may descend, like the testicles, into the inguinal canal and cross the external orifice, even reaching the labium. The persistence of the canal of Nuck, the narrowness of the pelvis and the elongated form of the ovaries favour this ectopia. I shall not add more now, as I shall have occasion to recur to the subject in connection with hernia of the ovary.

III. *Anomalies of the Fallopian Tubes*

They sometimes affect the whole organ, sometimes only the body of the oviduct or the fimbriated extremity.

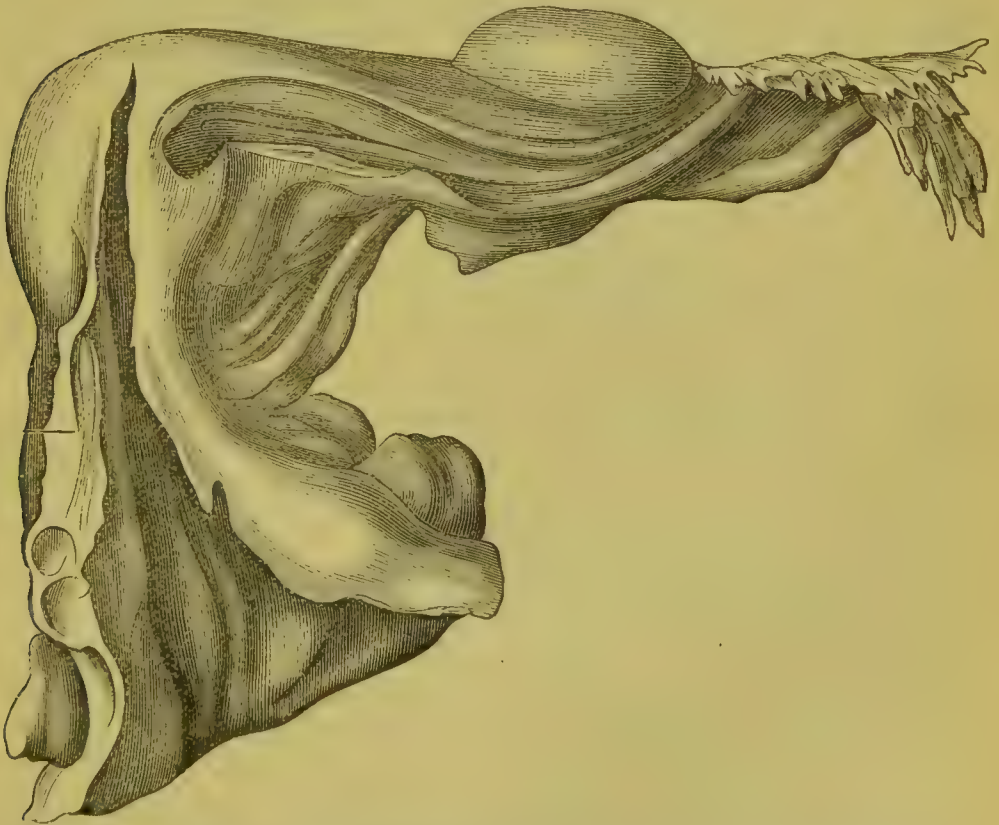


FIG. 63.—Right unicorn uterus: absence of broad ligament, of ovary, and of Fallopian tube on left side. Matthews Duncan, *Obstetrical Journal*, vol. i, p. 784.

Absence.—The complete absence of the Fallopian tubes is very rare, only occurring when the uterus is entirely wanting. Unilateral absence has been observed in cases of unicorn uterus, conjointly with that of the ovary (Fig. 63).

Rudimentary development.—The Fallopian tubes may be represented by traces only, or by more or less developed cords. In the condition of traces they are found under the form of muscular layers occupying the upper border of the corresponding peritoneal fold. One would say that the Fallopian tube itself was absent, and that only traces of its external longitudinal muscular tunic existed. More frequently they are observed in the condition of solid cords, in whole or in part, a disposition which can only be connected with arrested development, for it depends on imperforation of Müller's ducts and it coexists with other anomalies of the same kind, such as complete absence of the uterus, embryonic uterus, unicorn uterus with rudimentary horn and, lastly, complete absence of the cavity of a uterus apparently normal. In other cases the tubal canal appears well developed but is imperforate, an anomaly which coexists with the absence or embryonic development of the uterus, or with the atrophy of the horn in cases of unicorn uterus. In other cases congenital imperforation only affects the fimbriated end. Baillie, Reynaud, Guérard and Besnier have seen cases of this kind. Lastly, there may be a striking inequality in the length of the two Fallopian tubes. Puech has observed such a case in a woman married for ten years and sterile; the right Fallopian tube was of the ordinary length, fourteen centimetres, whilst the left was only six.

Vices of conformation.—The Fallopian tubes sometimes have an apparent shortness depending on the shortness of their longitudinal muscular tunic and on the more numerous and deeper folds which are the consequences of it. It is not uncommon to find contractions at some point of their course, and at other times dilatations, either primitive or consecutive to the existence of a constriction situated below and which forms, especially when obliterated by thick mucus, a more or less efficient obstacle to the progress of fluids from the Fallopian tube or ovary towards the uterus. But it is principally the fimbriated extremity which is subject to a number of varieties; sometimes the widening of the tubal canal on a level with the abdominal extremity is slight and its opening is surrounded with very short fringes; sometimes the fimbriated end is greatly enlarged, and forms below a sort of canal, which is in close communication with the ovary and the margins of which are furnished with broad fringes. At other times supernumerary fimbriæ are to be seen, as described by Richard and to which I have already referred (p. 14), to the number of from one to three on the same Fallopian tube, appearing always to have their seat on the upper wall of the tube and presenting a single opening. Puech, in an autopsy, saw two on each tube placed symmetrically.

Ectopias.—They may be lumbar or inguinal. With reference to the former we have nothing to add to what has been already said of lumbar ectopias of the ovary. As for the latter, considering the close

relations of the Fallopian tube and ovary there is no difficulty in understanding that hernia of the ovary cannot occur without the Fallopian tube accompanying this latter organ. As for hernia of the Fallopian tube occurring alone, a few cases of which have been quoted by Schiller, Voigt, Mayer, Scholler and Bérard, they are produced by a mechanism analogous to that of ovarian ectopias.

IV. *Anomalies of the Uterus*

The anomalies of the uterus are numerous and varied, but at the same time easy of interpretation.

1. Müller's ducts may be undeveloped or atrophied, in which case, if the ovaries are also wanting, there will be *complete absence of the internal genital organs*.¹

2. Want of development or atrophy may only affect the portion of the two tubes destined to form the body of the uterus; there may be a vagina, Fallopian tubes and ovaries, but the uterus itself may be absent—*uterus deficiens*.²

3. One only of the ducts may be atrophied or incompletely developed,

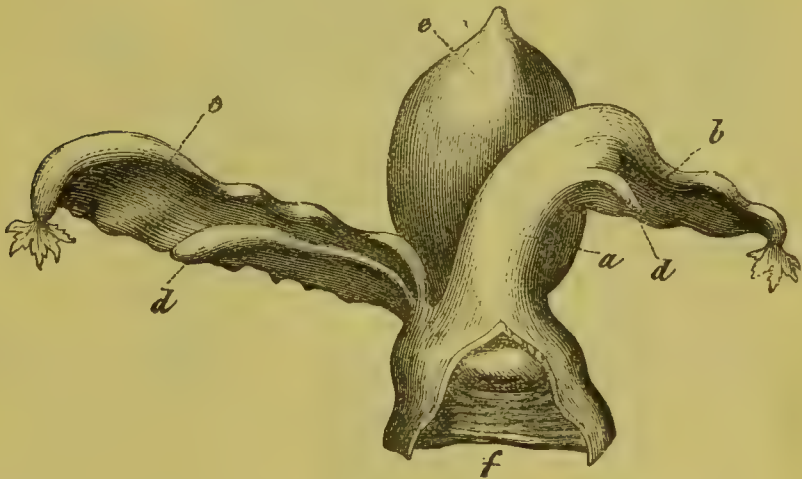


FIG. 64.—Unicorn uterus of a child, seen from behind (after Pole). *a*, right unicorn uterus (left half of uterus is not developed); *b*, right Fallopian tube; *c*, left Fallopian tube; *d, d*, ovaries; *e*, bladder; *f*, vagina, in which is seen the uterine orifice.

the other continuing its evolution; the uterus may be only half an organ and there may be only one Fallopian tube, the other half being in a rudimentary condition, in fact one horn only has been developed—*uterus unicornis* (Fig. 64).

¹ I have quoted a case of this kind: *Mémoires de l'Académie des sciences et lettres de Montpellier* (Section of Sciences), t. ii, p. 321. Montpellier, 1853. *Comptes rendus de l'Académie des sciences de Paris*, 26 Sept., 1853.

² Cases are on record known in which absence of the uterus co-exists with that of the ovaries and Fallopian tubes (Busch, Colombi, Courty, Klinkosch, Quain); others with absence of Fallopian tubes only (Boyd, Food, Otto, &c.); others with the presence of these organs (Burggræve, Gintrac, Puech, Serres, Ziehl, &c.).

4. Müller's ducts which are in contact with each other at their insertion into the cloaca may remain separated in the whole of the portion which ought to form the uterus. In this way two distinct uteri will be formed, each of which, however, will only represent the half of the normal uterus. The rest of Müller's duct is hollowed out into the form of a tube greatly enlarged at its free extremity, so that there is a double uterus, or rather two uteri, each having a neck and body and accompanied by a Fallopian tube and an ovary—*uterus duplex, diductus* or *didelphis* (Fig. 65).

5. Müller's ducts may be brought still closer together without, however, reaching the normal type. As in the preceding case, the isolated evolution of each of these ducts may take place, but their union, being incomplete above, will produce a uterus the fundus of which will be hollowed out by a more or less deep anterior groove dividing the upper part of the organ only into two portions enlarged in the form of horns—*uterus bicornis* (Figs. 66, 67).

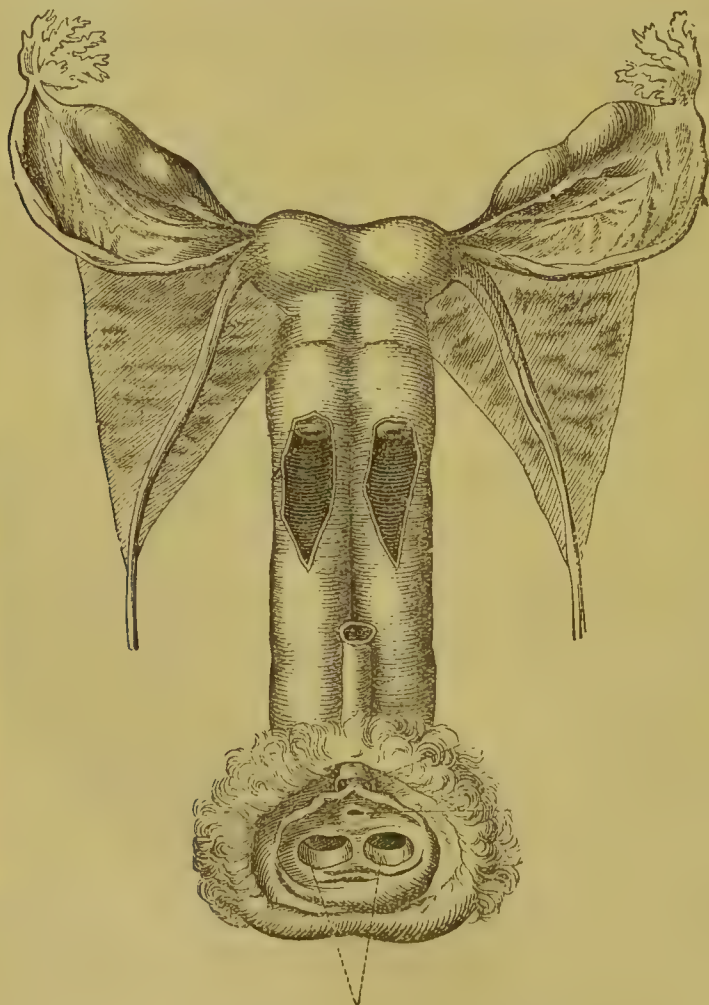


FIG. 65.—Double uterus and vagina in a girl of nineteen years (after Eisenmann).

6. The union of the tubo-uterine canals takes place at the normal point; the fundus of the uterus, however, in place of continuing its

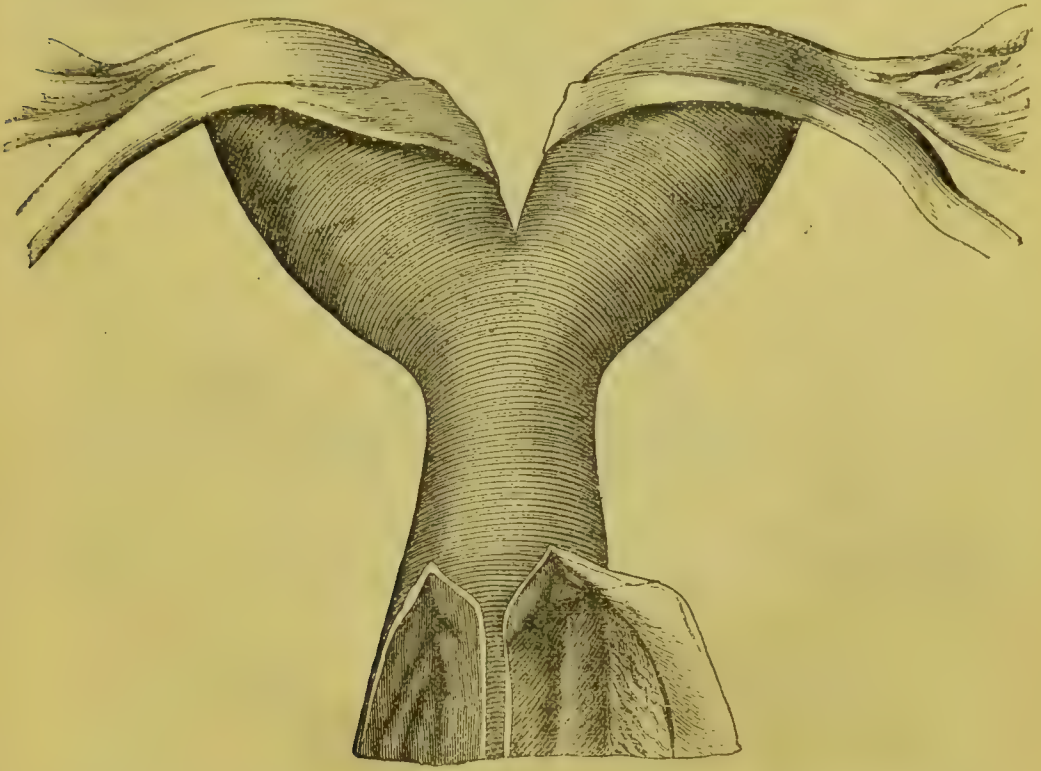


FIG. 66.—Double bicorn uterus, and double vagina in a girl of seventeen (after Schröder).

development by a median enlargement rising to the level of the extremity of the horns, remains depressed, as in the fourth month, and

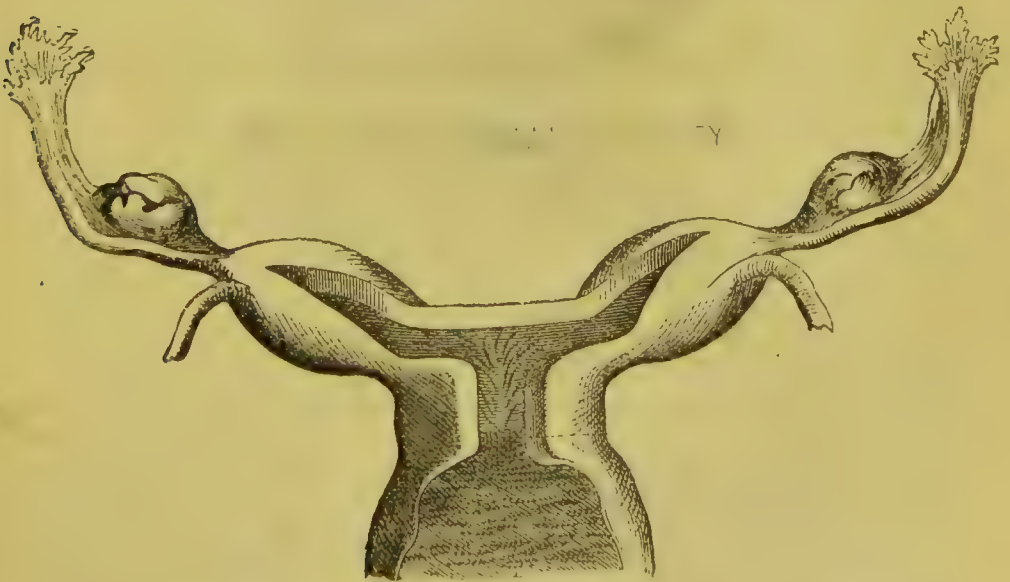


FIG. 67.—Bicorn uterus, with single neck, in a girl (after F. C. Nægele).

the fundus of the uterus is *incudiform* or *biangular* (Fig. 68); or it may be simply indented above like an ace of hearts and may keep



FIG. 68.—Incudiform or biangular uterus in a girl of seventeen (after Oldham); this arrest of development recalls the form of the uterus at the fourth month.

this form in spite of the absorption of the partition and the union of the two cavities—*uterus cordiformis* (Fig. 69).



FIG. 69.—Cordiform uterus, natural size (after Küssmaul). *a*, indented fundus.

7. The first part of the formative evolution (the approximation of Müller's ducts) takes place regularly. The uterus externally is of normal form—*uterus globularis* (Figs. 70, 71); but the second part of the work—the fusion of the two uterine canals into one by the disappearance of the contiguous walls of Müller's ducts—

is not accomplished; the division remains intact throughout the length of the organ, both body and neck—*uterus septus, bilocularis, bipartitus* (Figs. 70, 71).

8. The lower portion of the division is absorbed, but a longer or shorter part is still to be found in the fundus; the two cavities of the uterine horns, though separated above, communicate below to a more or less considerable extent; the neck is single—*uterus subseptus, semi-partitus* (Fig. 72).

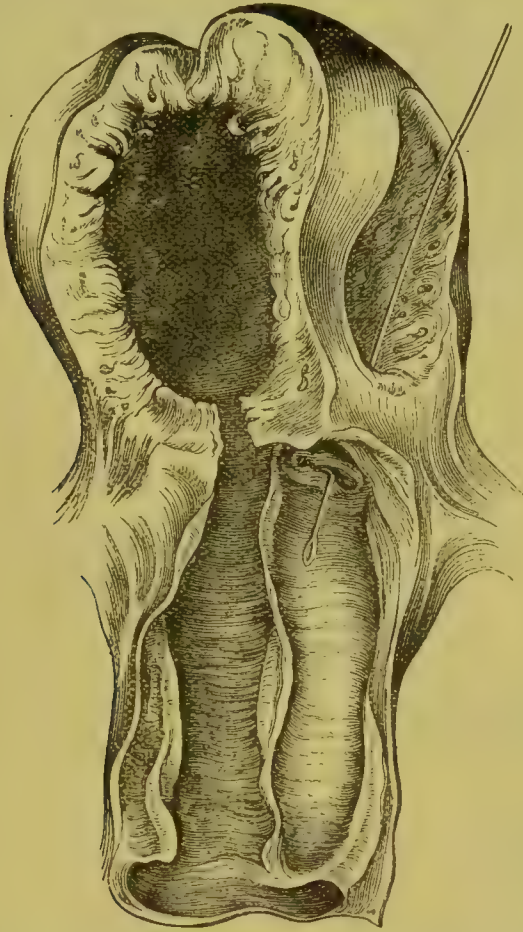


FIG. 70.—Double uterus and vagina, having the appearance of a single uterus and a single vagina with partition, in a woman of twenty-eight, eight days after delivery (after Spaeth). A director is passed through the cavity and orifice of the left half of the uterus; gestation took place in the right half.

9. The uterus is normal in its body, but there is atrophy or absence of the neck—*uterus with rudimentary neck* or *without neck*. Or the neck may be normal and the body atrophied or absent, a case of which I have seen—*uterus without body* or *without fundus*.

10. Lastly, the uterus may be normal in form, but arrested in its nutrition or development through life, remaining an embryonic uterus, *uterus embryonalis* (Fig. 73) or a foetal uterus, *uterus foetalis*; or an infantile uterus, *uterus infantilis*; or in the condition of a

uterus before the establishment of the menses, *uterus pubescens*;¹ in fact, a uterus in miniature, the majority of cases incorrectly designated as *uterus deficiens* being properly included in this class; or it may be solid, the cavity not hollowed out, and Müller's ducts being also solid;

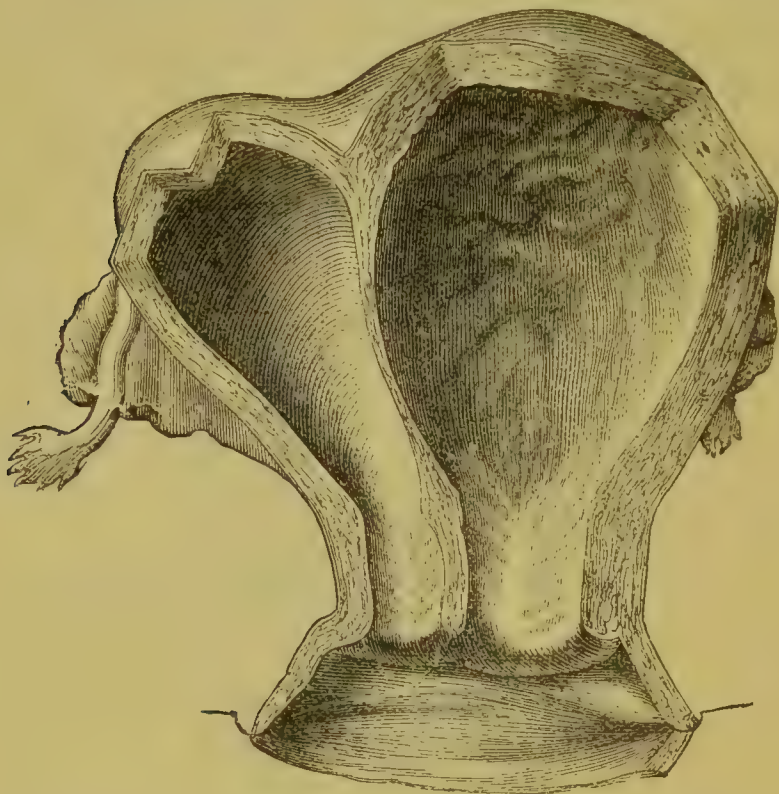


FIG. 71.—Double uterus (having the appearance of a uterus with partition) with single vagina, in a state of gestation (after Cruveilhier).

at other times it is only imperforate at its vaginal orifice, *uterus imperforatus*. Sometimes the vaginal portion of the neck is conical, *cervix acuminatus* (Fig. 73), and perforated by an insufficient orifice, either in the centre or at the side. When the neck is conical it is generally too long and may require to be partially amputated. Sometimes the vaginal portion of the neck is too short, or it may be completely absent, *cervix deficiens* (Fig. 74), or the uterus may have an abnormal flexion, vestige of the foetal state, especially antelexion, *uterus flexus*. In Küssmaul there are woodcuts of lateral flexions produced by foetal deviations, or by arrest of development in one of Müller's ducts.

Before closing this chapter on teratology I must give a particular description of the anomalies most frequently found with regard to the form and size of the vaginal portion of the cervix. Clinically, it is very important to be able to distinguish these anomalies by sight and touch, to be able to put the right interpretation upon them, to know

¹ Puech, *Annales de Gynécologie*, t. i, p. 378.

the diseases which they can produce, and to be sufficiently familiar with all their varieties to appreciate a distinction between those which have no result beyond that of being singular and those which

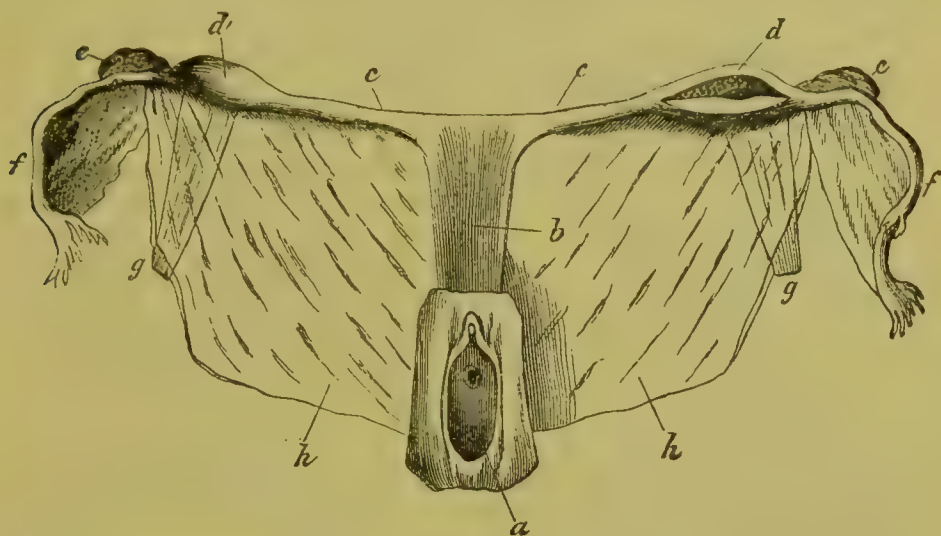


FIG. 72.—Rudimentary bicorn uterus in a woman of sixty (after Rokitsanski). *a*, vulva; *b*, a band of cellular tissue mixed with muscular fibres, having the form of a uterus (vagina); *c, c*, muscular cords representing the uterine cornua (cervix), and terminating in enlargements, *d, d*, of the size of a bean, hollowed out into a cavity capable of holding a lentil and covered with mucous membrane (uterus); *e, e*, shrivelled-up ovaries; *f, f*, oviducts; *g, g*, round ligaments; *h, h*, broad ligaments.

disturb or prevent the accomplishment of functions, and which sooner or later may become the starting point for certain diseases. Between the *cervix acuminatus* and the *cervix deficiens* just referred to as extremes of condition, there are many varieties of anomalies affecting

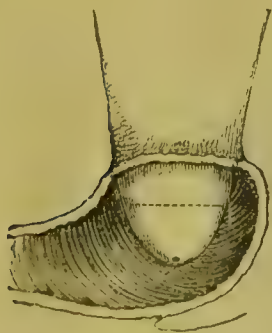


FIG. 73.—Conical neck with narrow orifice (after Sims).



FIG. 74.—Absence of the vaginal portion of the neck; the uterus rests upon the vagina in place of projecting into it.

the size of the neck, its form and the point of its vaginal insertion, or the form, size, situation of its orifice, &c. The number of anomalies I have observed is very great, but I shall omit all those which do not

cause any sensible alterations in the functions of the womb, and shall limit myself still more by only giving examples which may serve as types of numerous varieties connected together by a more or less striking resemblance. With reference to the size, the neck may be deficient, or may be present only in the form of a projection approaching more or less closely to the normal state, or lastly, it may be excessive in volume, attaining, even in nulliparæ, dimensions which, though seemingly characteristic of acquired hypertrophy, are sometimes really caused by a relative arrest of development. This seems paradoxical, but the fact cannot be doubted when we remember the large size of the neck, relatively, in the fœtus. The shape varies with the size. Sometimes the neck is depressed at the extremity of the vagina. Sometimes it projects excessively without any alteration of form, or with a cylindrical shape very slightly different from the normal. Sometimes it is completely conical; at other times, on the contrary, it is quite the reverse, the lips being turned back like a mushroom. When the lips, instead of being almost equal as in a normal condition, are unequal, they may give rise to alterations of form still further removed from the primitive type, and which create new obstacles to the accomplishment of the functions. If the orifice is directed backwards, the anterior lip projecting beyond the posterior, the neck, in place of having the shape of a cone, assumes the aspect of a snout, as may be seen in Figure 75 drawn from nature and representing the appearance of the cervix in a sterile woman married for eight years. The anterior lip may project still more, taking the form of a beak, or it may fall over the posterior lip, covering it like an apron, &c. We shall see that these natural tendencies of the cervix to assume the forms of a cone, mushroom, snout, &c., become exaggerated in certain pathological cases giving rise to hypertrophy, when the same forms become monstrous and cause so much trouble and pain to the organ as to necessitate an operation. This exaggeration only serves to bring

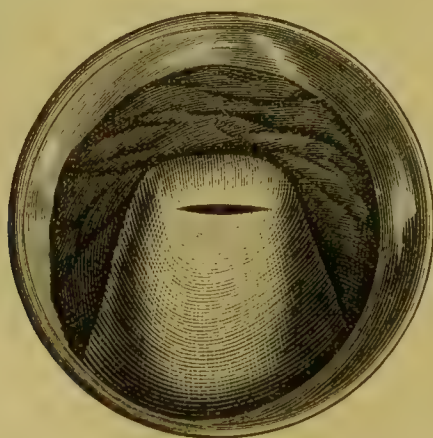


FIG. 75.—Cervix in form of snout, the anterior lip projecting over the posterior (from nature).

into relief the variety of abnormal configurations of the cervix. The orifice is of equal importance. In place of having the aspect of a

fissure bordered by two lips, anterior and posterior, it may have the form of a more or less narrow circular hole in the middle of a cylindrical neck slightly projecting, *i. e.* in every other respect like the normal condition. It is possible that menstruation may occur nor-



FIG. 76.—Normal or linear os on a depressed neck.



FIG. 77.—The same on a neck of normal shape and dimensions.

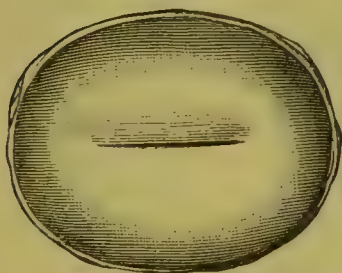


FIG. 78.—The same on a voluminous neck, with lips slightly turned back like a mushroom.



FIG. 79.—The same on a voluminous conical neck.

mally, and even that conception may take place. Nevertheless, such a tendency is sufficiently abnormal to cause some fear lest dysmenorrhœa may set in after marriage if not before, and that conception will be very difficult, and, indeed, highly improbable. As a rule, a uterine os having the form of a circle or point in place of a fissure or mouth (*ostium uterinum*) is always abnormal, and exposes the subject, sooner or later, to the more or less troublesome consequences resulting from it.

But there are other and more serious anomalies. The one most frequently met with in nulliparæ, and one which is the cause of innumerable maladies, is that of a narrow, circular os coinciding with an anomaly of form, principally conicity of the cervix, or with an anomaly in the position of the orifice, which has become excentric in one direction or another. In place of being in the centre of a cervix of normal shape the utero-vaginal orifice may be situated in the centre of a cervix depressed and even wanting. This case is rare and less important than the others in its consequences. But whether the neck projects normally or is depressed, the fact of the pin-point os is serious; therefore we must be able to diagnose it and not be misled by the appearance of a fissure, the superficial character of which might be overlooked till a thorough examination shows that the sound only penetrates into the uterine cavity by the pin point in the centre of the

apparent slit. A still more important anomaly is that of a pin-point os at the apex of a conical cervix; it is one of the most frequent and

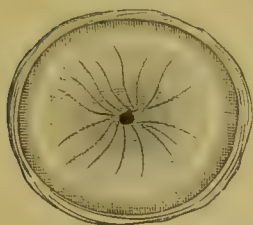


FIG. 80. — Abnormal pin-point os on a depressed neck.

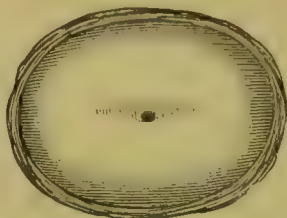


FIG. 81. — The same on a neck of normal shape and size.

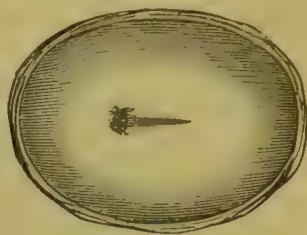


FIG. 82. — The same situated laterally on a normal neck.

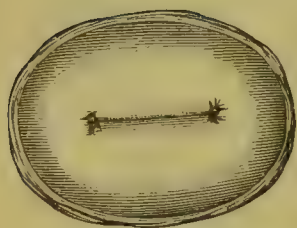


FIG. 83. — The same double or bilateral, at the two extremities of a fissure, on a normal neck.



FIG. 84. — The same at the apex of a conical neck.



FIG. 85. — The same situated laterally on a very conical neck.

most troublesome, since the narrowness of the orifice, whilst producing dysmenorrhœa, is not the only cause of sterility, the conical form of the cervix being still more unfavorable to conception.

In all cases in which the os is reduced to a pin-point dysmenorrhœa is produced sooner or later, and whether the neck be normal or conical—whether the orifice be in the centre or on the side—congestion occurs, as shown in the six preceding figures drawn by myself from nature or taken from Barnes.

The narrowness of the os may be complicated by its excentric position, either at the extremity of a superficial fissure or at the two extremities of a similar depression, having the appearance of a normal linear orifice bounded by marked angles or commissures, whilst in reality this depression is the vestige of that period of development when Müller's ducts are united, but when the intra-uterine septum has not yet been absorbed; therefore in making a careful examination, in the first case the inclination of the sound in the cervix, in the other case the possibility of introducing two sounds (one into each orifice) which may or may not touch in the cavity of the organ, will lead us to suspect and sometimes even to diagnose with certainty that the case in question is one of unicorn uterus, or of two uteri incompletely united. Quite lately I was able to diagnose the existence of a

right unicorn uterus: the pin-point os was to the right, the cervix swollen; whilst all the part above the right vaginal *cul-de-sac*, both before and behind, was tumefied, probably as the result of partial menstrual retention and considerable congestion of the right uterine

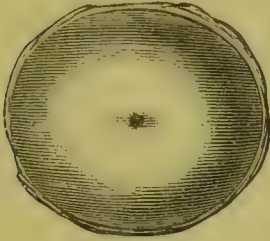


FIG. 86.—Pin-point orifice, on a normal neck congested as a consequence of dysmenorrhœa (*ad nat.*).

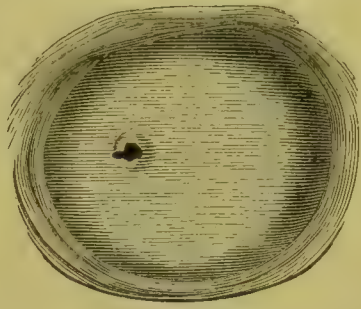


FIG. 87.—The same situated laterally.

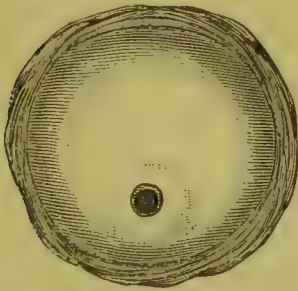


FIG. 88.—The same situated posteriorly (*ad nat.* after Barnes).

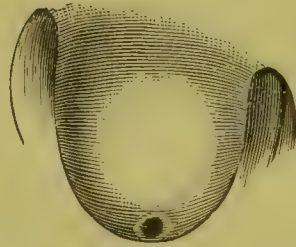


FIG. 89.—The same situated on a cylindrical cervix.



FIG. 90.—The same situated on a cylindro-conical cervix.



FIG. 91.—The same on a conical cervix.

horn, the presence of which was traceable as far as the hypogastrium, on a level with the brim, towards the iliac fossa of the same side; whilst the absence of any solid body where the left side of the uterus should be led to the supposition of the absence, or at least the imperforation, of a left uterine horn.

Lastly, very frequently the narrow os, in place of being situated at the apex of the conical cervix, is at some distance from it, very seldom in front, more frequently to the right or left, or behind.

Another anomaly which occurs frequently is the semilunar form of the os; whilst this does not cause dysmenorrhœa, it makes conception unlikely. Generally the convexity is posterior, occasionally anterior. In these cases there is an arrest of development with persistence of the



FIG. 92.—Semi-lunar orifice with anterior concavity, from hypertrophy of the anterior lip.

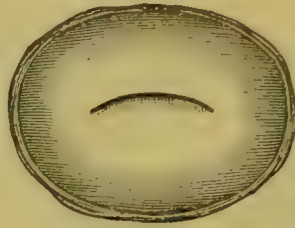


FIG. 93.—Semi-lunar orifice with posterior concavity, from hypertrophy of the posterior lip.

inferior part of the central column of the *arbor vitæ*, a vestige of the union of Müller's ducts and of the central septum which primitively separates the two uteri. This obstacle sometimes occurs in the canal or at the os internum, where it is not visible. In other women it is caused by an inflammatory hypertrophy following upon previous deliveries, or consecutive to a chronic inflammation. The cause varies but the effect is the same.

V. *Anomalies of the Vagina*

Absence.—It may be total or partial. In cases of total absence the vagina is replaced by cellular or fibrous tissue, and in both cases this

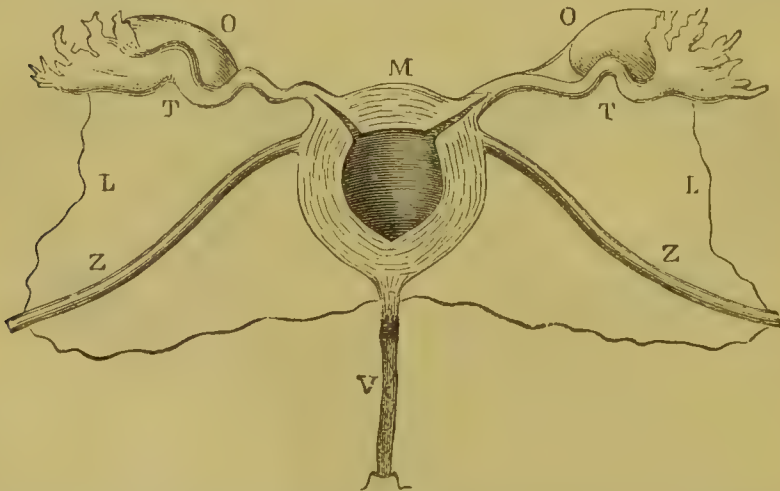


FIG. 94.—Complete absence of vagina, which is replaced by a thin, flattened, solid cord 12 centimetres long, formed of cellular tissue and longitudinal muscular fibres; retention of menses for seven years, puncture by rectum, purulent peritonitis causing death the eighth day. v, cord, representing the vagina; z, round ligament; l, broad ligament; m, section of the uterus and Fallopian tubes at their origin; t, Fallopian tubes dilated to the size of the little finger; o, ovaries (after Fürst).

defect of formation may coincide with absence of the uterus or with the existence of an obliterated or embryonic uterus, or with the existence of a normal uterus (Fig. 94). The partial absence may be more or less extensive; it may be reduced to the half or quarter of the vagina, and even to a kind of membranous septum, there being an insensible transition between this anomaly and a simple transverse septum. It may coexist, like the preceding, with absence of the uterus or with a normal uterus.

Arrest of development.—There are two kinds: persistence of cloaca owing to defective division between the rectum and bladder, and persistence of intra-vaginal septa from defective absorption of the elements which primitively make probably a solid canal of the vagina, like Müller's ducts from which the Fallopian tubes and uterus are formed.

A. *Persistence of cloaca.*—I have explained (pp. 58, 60 and 61) the mode in which the bladder, rectum, recto-vesical septum and vagina are developed from the pedicle of the allantois. The persistence of the cloaca and the consequent production of abnormal communications between the vagina and the bladder or rectum are to be attributed to an arrest of this development. The cloaca may be either complete or incomplete. The latter may be uro-genital (with inferior perforation or imperforation of the vagina) or recto-genital (with vaginal communication or imperforation, or rectal communication or imperforation); examples of these various kinds of anomalies have been observed. The former is sometimes complicated by abdominal eventration, communication between the vagina and the anterior abdominal wall, or extrophy of the bladder; at other times it exists without any other anomaly (Sue, Velpeau, Courty). If the reader wishes for further details he may refer to Puech's paper already quoted, as I shall merely mention what I have seen or what has come to my direct knowledge. I have seen a complete uro-recto-vaginal cloaca in a foetus of eight months preserved in alcohol; a large recto-vaginal cloaca with absence of the entire septum in a newly-born child; a superior recto-vaginal cloaca with absence of anus and lower extremity of rectum in a little girl just born; an inferior recto-vaginal cloaca with imperforation of the vulva or rather of the lower part of the vagina, the upper part of which communicated with the rectum and anus, in another newly-born child; a communication of the size of a five-shilling piece between the rectum and vagina immediately above the hymen and external sphincter in a girl of nineteen, and a similar one with imperforation of a very thick hymen in a girl of sixteen who menstruated by the anus; lastly, an opening in the form of a fissure three centimetres long in a virgin of twenty-five, in whom I discovered at the same time a double vagina and double uterus which had not been suspected, and on which I operated successfully; it was the left vagina which communicated with the rectum. Puech has communicated to me two cases of congenital absence of the recto-vaginal septum; in the first, there was contraction of the rectum by a membranous diaphragm, the fæces being excreted by the vulva; in the second, there was at the same time absence of the rectum, and the

operation (performed to give exit to the meconium) was followed by death.

B. *Division of the vagina*.—1. There may be a transverse partition more or less thick, membranous, complete, incomplete or annular. This anomaly depends on an arrest of absorption at some point. The persistence of the entire hymen with atresia is not included in this anomaly, or rather it stands on the borderland between anomalies of the vagina and vulva; it is the persistence of the partition existing primitively between the genital formations of the external layer and those of the intermediary layer. 2. A longitudinal partition running from before backwards, and separating a right from a left vagina (double vagina). One of the vaginæ may be imperforate and cause retention of the menses on this side.¹ This longitudinal division may be complete or incomplete. Both anomalies may coexist with *uterus bicornis*, *uterus septus* and their varieties, or with a simple

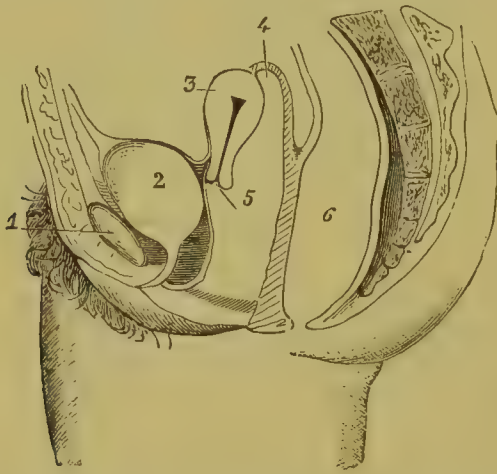


FIG. 95.—1, pubic symphysis; 2, bladder; 3, uterus; 4, *cul-de-sac* of the posterior wall of the vagina which is attached to the fundus of the uterus; 5, os uteri, the anterior lip of which adheres to the anterior wall of the vagina; 6, rectum (after Martini).

uterus (Maunoir). Sometimes only a vestige of this anomaly exists at some point of the vagina, more frequently at one of the extremities than in the centre; I have referred to a case where the seat of anomaly was at the hymeneal extremity. The coexistence of the longitudinal partition of the vagina with a simple uterus is relatively rare; whilst more than 100 cases are known of the coexistence of this anomaly with anomalies of the uterus, there are not fifteen of double vagina coinciding with a normal uterus (Puech). 3. A longitudinal septum going from right to left, separating the vagina into two secondary cavities, one anterior, the other posterior; a very rare anomaly, which only Bourjot Saint-Hilaire, Eugène Forget and Caradec have

¹ Puech, *Des atrésies complexes des voies génitales de la femme et de l'hématomètre unilatéral*, in *Annales de Gynécologie*. Paris, 1875. The author has collected twenty-five cases of this anomaly.

observed (each one case). Is it not possible that in these cases there may have been an accidental septum? or supposing the partition to have been congenital, may not its direction, so different from the preceding, be due to a deviation, to a kind of torsion, rather than to an absolute difference of direction of the septum.

Anomalies of size.—Amongst other anomalies observed in the vagina, the most remarkable are those of size. With respect to this, there are great differences in women; and in some these differences exceed the normal limits and constitute teratological states. Sometimes the length is affected, at other times the width. As to the length it is sometimes excessive, sometimes defective. The shortness of the vagina often produces a marked change in the situation, the relations and direction of the uterus; this shortness does not depend only on want of material; it often results from vicious insertions of the two walls, or of one of the walls of the vagina into the cervix. These insertions are sometimes too low (an arrangement which may simulate absence of the vaginal portion of the neck) and at other times too high, causing abnormal projection of the cervix into the vaginal cavity. This anomaly is especially marked when only one of the walls, generally the posterior, is inserted too high; it may even be inserted into the body of the womb (Fig. 95), which proves that the vagina is not developed, like the uterus, from Müller's ducts, but that it is an intermediate formation between these canals and the external genital economy. I have seen a great many examples of defect in the length of the vagina with descent of the cervix as a consequence. The uterus is deviated in one or the other direction according as one or the other vaginal wall is the shorter. I have generally found the anterior one the shorter. As to amplitude, sometimes there is excess, which disposes to prolapsus; sometimes, on the contrary, the vagina is too narrow, as proved by the numerous cases described by Antoine, de la Toison, Benevoli, Plenck, Scanzoni, &c. This deformity may be confined to a small part of the vagina, to a kind of diaphragm with central orifice. Sometimes it extends further, giving to the vagina the appearance of a funnel, broad below and narrow above. At other times it extends to several centimetres, but may yield to dilatation with prepared sponge, sometimes, in fact, it reduces the vagina throughout its whole length to a narrow canal like the urethra. It may cause serious obstacles to the accomplishment of the sexual functions, especially to delivery, and may necessitate the intervention of surgery.

VI. *Anomalies of the Vulva*

Absence.—The complete absence of the vulva has frequently been observed in monstrosities, especially in acephalæ, symmeles, &c. (Louis, J. L. Petit, &c.).

Arrest of development may consist in a rudimentary state of all the elements of the vulva, or in the partial absence of one or other of these elements, either of the labia, nymphæ, or clitoris; or in a persistent bifidity of this erectile organ, the corpora cavernosa of which are not

entirely united (Arnaud, Morpain) ; or, lastly, in an imperforation, a complete atresia of the hymen, which supposes an arrest in the work of absorption of this membrane, the result of which is to make the external genital zone communicate with the median zone.

Excess of development may take place in the labia or nymphæ, which may be double or triple in number, or may acquire colossal dimensions (apron of the Hottentots) ; or the hymen may be completely absent, which can only occur from excess of absorption ; or the clitoris may assume the size of a small penis ; or there may be union of the nymphæ or of the two margins of the vulval groove, and even of the labia, so as to present the appearance of a scrotum, in front of which there would be a hypospadias surmounted by a small penis, giving the most complete appearance of female hermaphroditism. The resemblance becomes still more striking when the ovaries, or one of them, form an inguinal hernia and descend into the sacs of the labia.

The hymen, which is between the external and median genital zones, presents anomalies which are also very interesting to study, owing to the connection which often exists between them and anomalies or alterations of the internal organs. They are represented in the following woodcuts, which are taken from the thesis of Roze and from drawings which I myself have made from nature.

The first (Fig. 97) is imperforation of the hymen (Roze). I have



FIG. 96.—Hymen of normal form in the virgin.

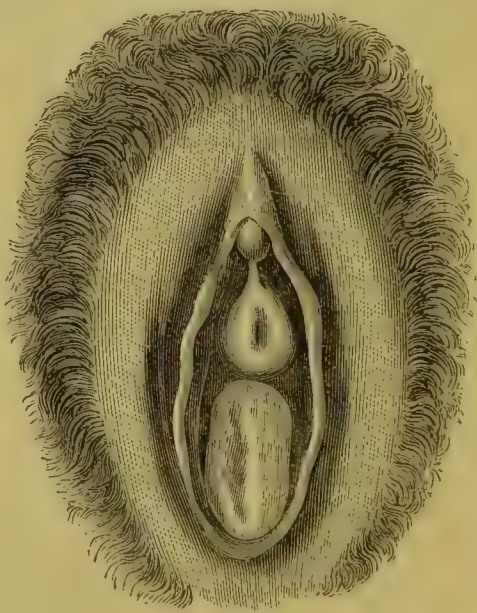


FIG. 97.—Imperforate hymen.

seen several cases, and have always operated by incision without any accident. The thickness of the imperforate hymen is very variable ; sometimes it is very thick and formed not only of skin but of a cellular layer lining it, whilst at other times it is constituted by a simple epidermic layer (Courty) which tears at the slightest contact without a drop of blood, as I have lately seen in a child of six months.

The second (Fig. 98) is a hymen divided by a simple fissure (Roze).

The third (Fig. 99) is a larger fissure giving rise to a bilabial hymen with irregular borders (Ledru).



FIG. 98.—Hymen with fissure.



FIG. 99.—Bilabial hymen with irregular margins.

In the fourth (Fig. 100) absorption of the tissue and perforation of the hymen has taken place at several points simultaneously, giving it an appearance like the rose of a watering can (Roze).



FIG. 100.—Hymen perforated like rose of a watering-can.



FIG. 101.—Puckered hymen with central orifice.

The fifth (Fig. 101) is a puckered hymen with a central orifice (Roze).

The sixth and seventh (Figs. 102 and 103) are hymens with a circular, or rather polygonal, central orifice, with from four to six lips, which are a kind of carunculæ (Roze).



FIG. 102.—Hymen with polygonal orifice and four carunculæ.



FIG. 103.—Hymen with polygonal orifice and six carunculæ.

The eighth (Fig. 104) is a hymen with a circular opening, but with serrated edges (Ledru). It is singular that in these cases the circumference of the meatus was also serrated.



FIG. 104.—Hymen with serrated borders.



FIG. 105.—Horse-shoe hymen.

The ninth (Fig. 105) is a semilunar hymen, but the upper angles are broader and prolonged towards the upper border of the vulval ring, which has led to its being called a horse-shoe hymen (Roze). I have recently seen one of these thick, resistant hymens, very broad and allowing of considerable dilatation, in a virgin of thirty affected with a myoma of the body of the uterus with marked descent of the anterior vaginal wall (Courty).

The tenth (Fig. 106) is a hymen with a circular orifice situated to the left side (Roze), probably belonging to a double vagina imperforate on the right side.

The eleventh (Fig. 107) is a hymen with two orifices or biperforate



FIG. 106.—Hymen perforated at left side.



FIG. 107.—Biperforate hymen.

(Roze), the orifices being probably vestiges of the primitive duplicity which extends from the two uterine horns to the two hymeneal orifices, passing through the double vagina (Courty).

The twelfth (Fig. 108) is a hymen with two well-marked openings, almost equal, observed in a young girl, who menstruated regularly and without pain, in whom the inter-hymeneal septum extended from 1 to 2 centimetres into the vagina, being a vestige of the inter-vaginal septum which had not entirely disappeared (Courty).

The thirteenth (Fig. 109) is a biperforate hymen, one of the orifices being smaller than the other, without any trace of median vaginal septum, observed by myself in an old maid, and at another time in a married woman of twenty-six affected with membranous dysmenorrhœa without any symptom of teratological condition of the uterus. The septum was applied against the right vaginal wall, and had a direction and position which made it certain that the left orifice only had been used in copulation. She was not aware of the anomaly till I discovered it (Courty).



FIG. 108.—Biperforate hymen with equal orifices, with prolongation of the inter-hymeneal septum to 1 or 2 centimetres into the vagina.



FIG. 109.—Biperforate hymen with unequal orifices.

The fourteenth (Fig. 110) is the hymen with double semilunar orifice, equal on both sides, forming the continuation of a double vagina represented in Fig. 65 (Eisenmann).



FIG. 110.—Biperforate hymen, forming the continuation of a double vagina and double uterus.

PART I

GENERAL SURVEY OF UTERINE DISEASES

CHAPTER I

DIAGNOSIS OF UTERINE DISEASES IN GENERAL—PRESUMPTIVE SIGNS FURNISHED
BY THE SYMPTOMATOLOGY OF UTERINE DISEASES—CERTAIN SIGNS FURNISHED
BY DIRECT EXPLORATION.

It is constantly said that diseases of the uterus are far more common now than formerly; but this is an error which can be easily accounted for. Our forefathers recognised these diseases less frequently because they knew less about them, and because they often ascribed to other causes the serious and even fatal results produced by them. Sometimes they successfully treated the morbid symptoms, and so got rid of the disease without being aware of its existence; and, indeed, we know that a certain class of these affections will really yield to simple hygienic measures.

It is, then, of the first importance, before entering on the study of individual diseases, to gain a general view of the symptoms which all uterine maladies possess in common, and which may reveal or conceal the true state of the case, according to the attention and skill of the observer. We must point out that uterine diseases have many of these common symptoms, which indeed were almost the only ones formerly known; and in certain cases it is quite possible to apply a similar, if not identical, treatment to them, with reasonable chance of success. We must also indicate the measures by which morbid conditions depending on uterine diseases, as well as the diseases themselves, can be ameliorated or cured.

This introduction will help us to understand how our forefathers failed to recognise these diseases, and how they sometimes cured them without having suspected their existence; and it will also give us the key to the errors into which several gynecologists of the first half of this century fell, in supposing a simple morbid state to be the prime factor in all uterine pathology. They arrived at too hasty conclusions from the new means of investigation put into their hands by the inventive spirit of the age, and did not see that if the ancients erred in ignoring the great mass of uterine diseases, they themselves were almost equally wrong in simplifying its pathology to the extent of embracing all in one type of malady.

Lisfranc and his disciples found the explanation of all uterine diseases in congestion, Valleix in displacements. Those who followed Blatin and Tyler Smith thought leucorrhœa the great evil, while Récamier

and his school talked of ulcerations and granulations. The more modern teachers, like Bennet, Nonat and even Aran, although recognising distinctions in the morbid states, were inclined to trace them all to the common source of inflammation.

From this exclusive pathology came equally exclusive therapeutics. Those who saw congestion everywhere kept their patients in bed; those who only discovered displacements applied mechanical treatment only. Some directed all their attention to curing leucorrhœa as the cause of any ailment, and thus concentrated their efforts on the destruction of ulcerations by caustics or the actual cautery. Others, again, devoted themselves resolutely to subduing inflammation by bleeding, baths and emollients.

Thus it appears that uterine medicine has passed through the same stages as all other branches of medical knowledge. From ignorance and chaos emerged crude ideas, which in their turn gave birth to systematic knowledge. Let us hope that by going to the root of the matter, by a thorough and complete study of these diseases, we shall at length reach a really scientific mastery of their various species and true nature.

The false idea that, because uterine diseases had common symptoms, they must also share a common nature, led to equally erroneous consequences in identical treatment for all cases. The differentiation of their various kinds will, on the contrary, teach us to treat them, not all alike, but each by a special method founded on the indications furnished both by the origin and manifestations of the disease. We must therefore master the symptoms common to all uterine diseases, not only for the sake of a general diagnosis, but that we may be on our guard against analogies that are only apparent, and may recognise, in spite of misleading resemblances, the true differences that characterise each variety.

The interest of this general study of diseases of the womb is thus intensified. Our diagnosis will not be formed simply by the consideration of certain symptoms which indicate the presence of uterine mischief; it will depend on a proper interpretation of these symptoms, or of groups of symptoms variously arranged, as the pathognomonic expression of each type of disease. So also we shall not be satisfied with a general line of treatment, but shall make a point of studying each separate indication, so that from the character of the chief symptoms we may deduce the appropriate remedies. From such simultaneous study of diagnostic signs and therapeutic means we ought to acquire, on the one hand, a comprehensive knowledge of uterine diseases, and we shall also have prepared for ourselves a safe pathway with many finger-posts, to guide us aright as to the diagnosis and treatment of each particular malady.

“By their almost latent state, their great variety of symptoms (often very transitory), their sympathetic effects on all parts of the economy, and their immense influence on the nervous system, uterine diseases are peculiarly apt to lead medical practitioners into errors of diagnosis.” Thus wrote Lisfranc, who dedicated seventy-four pages to pointing out

such diagnostic errors, with illustrations from his own observations.¹ I have myself seen mistakes made by practitioners of excellent standing which would have been simply incredible without such evidence. For example, I remember one case where a previous pregnancy was asserted while the conical cervix ought to have suggested sterility. I have seen cases of leucorrhœa mistaken for blennorrhagia, and the peace of households consequently destroyed.

The best way of escaping such errors is to understand their cause. It is certain that the majority of medical men can diagnose the diseases of other organs better than those of the uterus; and hence we may be sure that there are real difficulties in the way. These are partly due to the fact that the uterine symptoms are not always the most prominent, that they are frequently slowly developed, and sometimes do not attract the patient's attention, while disorders of the alimentary canal or nervous system demand more notice and cause more evident suffering. How often is one consulted for neuralgia or hysteria; for symptoms manifested in the stomach, the heart, or the liver; for digestive troubles—anorexia, nausea, diarrhœa, and for all the train of evils depending on poverty of blood—anæmia, chlorosis, emaciation and exhaustion, but the natural and symptomatic manifestations of an unrecognised uterine malady!

The explanation lies in the fact that the uterus exercises a most powerful influence over the whole economy, and that very often an apparently insignificant disorder affecting this organ is felt throughout the body to a quite disproportionate extent, causing troubles in neighbouring organs, functional derangements of the various systems, and in fact a result greatly exceeding its cause. Most frequently the gravest effects are felt in the general health and not in local symptoms. Such appearances may naturally mislead the invalid, but they ought rather to put a skilled physician on his guard, and suggest to him the existence of the morbid state that they only thinly veil. They should lead him to ask questions which may help towards the confirmation of his suspicions and the discovery of additional local symptoms, which should end in the direct examination of the organs in which disease really centres.

It is of importance to proceed step by step, and to pass from general to local symptoms; to ascertain the condition of the principal functions and their derangements, before proceeding to investigate the troubles more immediately connected with the uterine system. In this way the practitioner not only provides himself with the guidance of a sure clue which keeps him from losing himself in the chaos of morbid conditions, gradually leads him away from mere functional and symptomatic derangements, and brings him closer to the original cause of all these evils; but at the same time he is enabled to carry the sufferer's mind along with his own, and to make her realise the true origin of her troubles.

It is essential that the patient should be led steadily to the conviction at which the physician has already arrived, for this conviction is

¹ *Clinique chirurgicale de la Pitié*, vol. ii, p. 182. Paris, 1842.

the only means by which he can hope to make her understand the necessity for a local examination and agree to submit to this painful trial. This point is the more important, as a woman's decision on this matter will be entirely governed by the fact that she is or is not convinced that she is suffering from disease of the womb. Women are so much afraid of polypi, cancers, and ulcerations—which sum up their ideas of all uterine maladies—that the reasonable terror inspired by these affections will not only remove their repugnance to an examination, but will make them earnestly desire it. Even the less sensible women will feel their instinct of modesty overborne by their desire of self-preservation, and I can assert that—putting aside the members of religious orders, among whom it is often impossible to obtain any examination of the genital organs—I have never yet met with one woman, even unmarried, who has refused to allow an examination when she was thoroughly convinced that her malady was really in the womb.

Then of course the direct exploration by sight and touch reveals signs absolutely pathognomonic; and these, in combination with the symptoms already noted, enable us to determine absolutely the exact seat and form and usually also the exact nature of the disease.

I believe I cannot better explain the various steps towards a diagnosis than by following exactly the order in which patients should be interrogated and examined. Experience has taught me the value of such a method in teaching a tolerably difficult subject. In dogmatic teaching synthesis may be preferable, but in clinical instruction I prefer analysis.

Let us imagine a patient of the kind most commonly met with; let us first ascertain of what she specially complains; let us review all the more general symptoms in their order of frequency, and then let us come gradually to local symptoms; then demonstrate the best modes of examination, and finally enumerate the various indications which we may expect to find.

All general and local symptoms related by the patient or observed by the physician, without direct examination, are rational or subjective; they form a basis of probability or presumption. What we learn by direct examination are sensible or objective symptoms; they form a basis of certainty. The latter are to be sought only subsequently to the former, unless we find in the first instance sufficient reason for immediate examination.

PRESUMPTIVE SIGNS INDICATING UTERINE DISEASE

General Symptoms.—Whenever a change of condition as well as of function takes place in the womb, as at puberty, at each menstrual epoch, during pregnancy, and at the menopause, there is a tendency towards a morbid uterine condition which in turn will react painfully on the whole system. A pathological change of considerable importance may take place, and may long remain unnoticed, whilst the

most insignificant functional disorder is sufficient to disturb the whole economy. It is very striking to observe the disproportionate magnitude of this general disturbance compared to the insignificance of the change which has produced it.

It is therefore from ignorance as well as from modesty that the majority of women suffering from chronic disease of the womb complain of symptoms which seem to indicate a malady in no way connected with this organ. Some complain of nervous troubles, giddiness and neuralgia; others of nausea and of disorders of digestion; the majority of weakness and exhaustion. In short there are almost always functional disturbances of the nervous and digestive systems, which in turn tend to produce various morbid cachexiæ, just as in the beginning of pregnancy we have vomiting, dyspepsia and nervous disturbance, and these are apt to be followed by anæmia, chlorosis and emaciation.

But we must remember that symptoms can do no more than sound the tocsin of alarm; we must not expect them to indicate precisely the site of the lesion, and still less to explain the cause of the suffering. We must therefore first ascertain whether these pathological conditions are symptomatic or idiopathic. To do this we must not only assure ourselves of organic integrity side by side with functional derangement, but we must endeavour to identify the original cause of disturbance, and to fix upon any special indications which may enable us to trace up the connection with the uterine system. In studying general symptoms I will follow the usual order of their appearance.

I. *Disorders of digestion.*—Every practitioner must have had patients who came to consult him for gastric derangement and dyspepsia, when the real source of trouble lay in the womb; and I have known such cases treated by distinguished physicians for the cure of a malady that never existed. Indeed, this whole class of disorders—gastralgia, nausea, dyspepsia, anorexia, perverted appetite, œsophageal constriction, the *globus hystericus*, &c., &c.—these are of all others the symptoms which most frequently accompany uterine diseases, and more especially affections of the body of the womb. In such cases these alone are complained of because these alone are felt.

The first and most common of such derangements is an increasing difficulty of gastric digestion. This is not a true dyspepsia. There is a good appetite, and the intestinal functions are healthy; but gastric digestion is slow, and is accompanied by discomfort and epigastric tenderness, with distension and a sense of suffocation from the flatulent development of gases, which lead to frequent inodorous eructations, obliging women to loosen their dresses and to avoid the least pressure on the epigastrium. Sometimes a desire for food returns very soon after a meal, but this is purely factitious. Digestive inertia and pain is often succeeded by real dyspepsia of a nervous type, involving much suffering and great delay in the accomplishment of digestion, with sensations of weight and pain, swelling at the epigastrium, bitter regurgitation, headache, exhaustion, incapacity for work, and a sense of sinking which cannot be removed by food. This type of dyspepsia is purely nervous and symptomatic of uterine disease,

while it has not the characteristics of true idiopathic dyspepsia. The tongue is clean and normal, not dry, neither edged nor spotted with red, and rarely furred. This in itself is an important diagnostic sign. In the third stage this kind of indigestion is marked with want of appetite and a tendency to nausea, sometimes with actual vomiting of food, either before, during, or after meals. This symptom occasionally leads the sufferer to believe herself pregnant. Digestive troubles of this kind do not merely indicate uterine disease; they suggest further, that it is the body and not the neck of the womb that is involved. Ovarian disease is also more apt than affections of the cervix to produce these digestive and nervous derangements. In addition to these we may find, though more rarely, a derangement of the biliary secretion, described by Bennet¹ and Aran.² This affection causes enlargement of the liver and gall-bladder, and produces fits of sharp pain, which begin in the hepatic region but extend over the chest, breast and right shoulder. They are accompanied by bilious vomiting and diarrhoea, with excessive sensibility in the epigastric and right hypochondriac regions. These attacks occur most frequently a few days before the menstrual period, and are accompanied very often by slight jaundice. Bennet thinks they are purely symptomatic of dyspepsia, but Aran considers them to be true hepatic colics, due to a biliary lithiasis, which seems connected with urinary lithiasis, especially at the menopause.

II. Nervous disorders may be produced by uterine disease (1) *directly*, i. e. by sympathetic irritation of the nervous system; (2) *indirectly*, by means of impoverishment of the blood and general constitutional debility. Indeed, these morbid phenomena may alternately act as cause and effect, for the poverty of blood may be due to defects of innervation as well as of digestion. They react both on the sensory and motor functions, whether in the domain of voluntary or involuntary organic life. Large account must also be taken of disorders of sensation, which may take the form of (1) anæsthesia; (2) visceral neuralgias; (3) neuralgia of the usual type.

(1) *Anæsthesia* may affect many parts of the epidermis, but is especially frequent in the lower limbs. Sometimes it invades the genital organs, the clitoris and vagina, which are then no longer capable of being excited, and even the uterus itself, which falls into a state of inertia, the sexual life of the woman being thus prematurely brought to a close. I have seen several examples of this kind, where sexual desire and pleasure in coitus were entirely lost after the beginning of uterine disease.

(2) These nervous affections attack not only the bladder and rectum, which are close to the uterus, but also remote organs, such as the liver, the intestinal canal, the stomach, and more especially the heart, so

¹ *A practical treatise on Inflammation of the Uterus, its Cervix and Appendages, and on its connection with other Uterine Diseases*, 4th edition. London, 1861, p. 119.

² *Leçons cliniques sur les maladies de l'utérus et de ses annexes*. Paris, 1858, p. 141.

that cardiac suffering and palpitation alarm the patient extremely, and make her fear the existence of an aneurism or other organic lesion.

(3) *Neuralgia*, however, is the commonest of all these disorders, not only in the lumbar and abdominal regions, where it might possibly be supposed to be propagated from the uterus, but also in more distant parts, and specially intercostal neuralgia on the left side, which makes the patient fear that her heart is affected, and trifacial neuralgia, which causes the sensation of a nail being driven into the skull in the parietal region, as described by Sydenham.

Intercostal neuralgia is often associated with pain in the breast, shoulder and arm of the same side, and if with lumbago sciatica and facial neuralgia it may suggest to the patient the fear of hemiplegia. It is not rare to find either hyperæsthesia or anæsthesia affecting one half of the body only, being, in fact, a kind of hysteric hemiplegia affecting sensation, as in other cases it may affect motion.

Uterine disease may also manifest itself by sympathetic pains in the breast extending to the axillæ and causing a feeling of swelling and a particular kind of erethism often experienced during menstruation and pregnancy. These sympathetic pains in the breast are very common, especially during menstruation, sometimes sharp, sometimes dull, the mammary glands being occasionally so swollen that it is impossible to bring the arm close to the side.

Hysteria, which seems to be a natural point of transition between disorders of sensation and of motion, since it includes both, is not exclusively connected with the uterus or the ovaries, nor even with the whole genital system. It is a chronic nervous affection characterised by two kinds of symptoms; on the one hand we have various permanent symptoms, such as anæsthesia, or it may be hyperæsthesia, or neuralgia, spasms, convulsive cough, or paralysis of different kinds; on the other hand we have intermittent symptoms, attacks coming on at irregular intervals, characterised by the *globus hystericus*, a sensation of suffocation, or a loss of consciousness accompanied by various disorders of sensation and motion, and generally terminating in a fit of crying or in polyuria. This nervous affection often accompanies uterine disease, but it may be developed independently of this cause; indeed, physicians of great authority tell us it may be met with in men. Nevertheless, it cannot be denied that the uterus or ovary, whether or not in a normal condition, is most generally the starting-point, if not the seat, of this affection. We need no further proof of this than the extreme frequency of hysteria among women, especially among those of a passionate nature who exercise self-restraint; and the same thing is demonstrated by the voluptuous character of the convulsive movements accompanying such attacks, as regards not only those of the arms and eyes, but especially of the pelvis, even in the case of virgins wholly ignorant of sexual relations. If, helped by the light which recent researches have thrown on the physiology of the nervous system, we endeavour to discover the relative share of influence exercised by the nerves and by the uterus on hysteria, we must admit that the disease is really a neurosis, that is to say, that it is due to a

general derangement of innervation, in which the whole nervous system partakes with effects varying in form and in degree according to the exciting cause and to the special idiosyncrasy in each case.¹ But we must remember that these symptoms, so varied in detail and yet so similar as a whole, are only manifestations of the reflex action of brain or spinal cord, the starting-point having been irritation in some other organ, generally in the generative system. This irritation and its influence transmitted to the nervous centres (analogous to the *aura epileptica*) is often overlooked, while yet producing endless phenomena of sensation or motion, affecting sometimes the whole economy and sometimes only the various parts of the reproductive system in which it took its rise. Thus hysteria is not properly speaking a disease of the uterus or ovaries, but functional derangements of these organs may be an exciting if not a primary cause of it. I say functional derangement rather than disease; for usually it is some condition of pain, excitement, or irritation, nervous or vascular, in some part of the genital organs that forms the starting point of hysteria in pale, nervous and emaciated women, who already are predisposed to it. Sometimes marriage is sufficient to develop this condition, which in its turn produces hysteria.

On the other hand, when there is real uterine disease the patient may be irritable, neuralgic and even partially paralysed, but she will seldom complain of the *globus hystericus*, or suffer from any really serious hysterical fits or convulsions. In fact true hysteria is one of the rarest of the nervous disorders occurring as general symptoms of uterine disease.

Spasms, tonic or clonic, muscular rigidity, contractions or convulsions, may occur incidentally more frequently in the involuntary than in the voluntary muscular system. May not vesical tenesmus, vomiting, spasmodic dyspnœa, cardiac palpitations, &c., be attributed to this cause? Of such nature also is the little dry cough which Aran² calls "the uterine cough," which differs essentially from the loud and noisy hysterical cough that somewhat resembles pertussis, and which I think Trousseau³ is right in attributing to the convulsive motion of the muscles of the larynx and diaphragm. This uterine cough is rare except in cases of great debility and exhaustion; and consequently it is a symptom which should arrest the attention of the physician. He must decide whether it is nervous and merely symptomatic of uterine disease, or due to the commencement of pulmonary tuberculosis.

¹ Coste, *De l'hystérie considérée principalement au point de vue de sa nature et de ses causes*. Thèse de Montpellier, 1863, No. 6. See also Rouget, *Physiologie des actions réflexes*, introduction to the French translation of *Paralysis of the Lower Limbs*, by Brown-Séquard, 1864. And Brown-Séquard, *Arch. gén. de médecine*, January, 1856; *Causes organiques et mode de production des affections dites hystériques*, *Gazette médicale de Paris*, 1846; *Leçons sur les maladies du système nerveux*, Bourneville, 4^e fascicule. Paris, 1873.

² Op. cit., p. 146.

³ *Clinique méd. de l'Hôtel-Dieu de Paris*, t. ii, p. 205, 2^e édit.

Motor paralysis is very rare as a nervous symptom of uterine disease. Aran¹ has denied its existence. It certainly must not be confounded with a numbness of the side of the body corresponding to a lesion of the generative system, nor with the immobility to which a patient may be driven by the intense pain occasioned by the slightest movement; nor even with more or less complete paralysis of the lower limbs, which may arise from mischief in the pelvis causing compression of the great nervous trunks. But besides these direct results of organic lesions acting mechanically on those parts of the nervous system with which they are in contact, we may have indirect and sympathetic disturbance manifested in the motor nerves.

No one doubts the existence of hysterical paralysis; why may we not have similar states produced by a suffering condition of the uterus and ovaries which could itself develop hysteria? I have seen two very remarkable instances, one of hysterical and the other of uterine paraplegia. The paralysis need not be general, nor affecting the upper limbs, as Aran contends, in order to be regarded as sympathetic. Indeed, a reflex paralysis, starting from the uterus, is more likely to affect the lower parts of the body. Lisfranc² mentions the case of a lady suffering from paraplegia, who had been treated without benefit for a supposed affection of the spinal cord, but whose condition began to improve only when attention was paid to a chronic metritis, which was the real cause of the paralysis. He gives another case of paraplegia, where the cure of this affection kept step exactly with the relief of the uterine malady. Nonat³ relates several similar cases, and shows that when the uterine disease is unilateral the paralysis is so also. These last cases seem to me to present some difficulties. I must refer readers to his own work, and also to the theses of his pupils, Esnault⁴ and Vallin.⁵ Brown-Séguard⁶ refers to these cases, and mentions having been consulted in 1855 by a young lady for extreme weakness, amounting to paraplegia, at each menstrual period. Sensibility was normal; there were no symptoms of hysteria and no paralysis of the bladder or rectum. There was dysmenorrhœa, congestion and ante flexion of the uterus, which was enlarged and very sensitive, the tenderness extending to the broad ligaments, &c. The womb was supported by an abdominal bandage, and in a few days there was a marked improvement; in less than a fortnight the paralysis disappeared, though it had lasted for six months and had been treated by strychnia, galvanism and hydropathy, as well as iron and other tonics. At present I have a young girl under my care who had suffered for

¹ Op. cit., p. 147.

² *Clinique chirurgicale de la Pitié*, vol ii, p. 199.. Paris, 1842.

³ *Traité pratique des maladies de l'utérus et de ses annexes*, p. 381. Paris, 1860.

⁴ *Des paralysies symptomatiques de la métrite et du phlegmon périutérin*. Thèse de Paris, 1857, No. 206.

⁵ *Des paralysies sympathiques des maladies de l'utérus et de ses annexes*. Thèse de Paris, 1858, No. 33.

⁶ *Lessons on the Diagnosis and Treatment of the Principal Forms of Paralysis of the Lower Extremities*, London, 1861, p. 11.

more than a year from violent hypogastric pains, sometimes associated with hysteralgia and purulent vaginal leucorrhœa, and at other times complicated with similar symptoms in the rectum and bladder, with retention of urine, which was loaded with deposits. This condition was accompanied by complete paralysis of the lower limbs, which withstood every kind of treatment, general and local, but is now disappearing as the pelvic and uterine pains are gradually yielding to the influence of atropine injected subcutaneously into the hypogastrium. Not long ago I was consulted by a lady affected with paraplegia, who was on her way to Balaruc; a chronic metritis was discovered, appropriately treated and cured, the paralysis also disappearing without the help of the Balaruc waters. Hunt, Romberg, Wolf, Mayer and others have mentioned similar cases. Brown-Séquard asks, What causes such paraplegia? We cannot admit that in the majority of cases it is due to compression of the nerves of the lower limbs, because the increased size of the organ is not sufficient to produce such an effect. Besides, sensibility is very little, if at all, affected. We must therefore conclude that the uterine disease produces the paraplegia by a special action on the spinal cord, and that, therefore, such paraplegia has all the characters of reflex paralysis. In such cases the cure of the paralysis must depend on that of the uterine malady, and our main duty is, therefore, to be able to diagnose this latter disease and treat it appropriately.

III. *Disorders of nutrition.*—Derangements of the digestive and nervous systems naturally bring about an impoverished state of the blood and impaired nutrition. Anæmia, chlorosis and general debility are, therefore, constantly present in women who have been ill for some months, and may be taken as general symptoms of uterine disease.

Chlorosis occurs specially in ill-nourished young women who have probably already suffered from it at puberty and during pregnancy, so that it is rather developed than originated by the uterine disease.

Anæmia is most common among older women, among those suffering from serious diseases, such as cancer, fibroid tumours and polypi, where repeated and profuse hæmorrhages have occurred. It is less a morbid affection than a direct or indirect result of the uterine malady. Repeated losses have impoverished the blood and deprived the economy of needful materials for repair; suppuration and insufficient assimilation have weakened the patient; these are followed by loss of colour in the skin, transparency of tissues, local œdema, a frequent weak pulse, general debility and, in fact, symptoms resembling those that follow after delivery or after some serious operation.

Chlorosis, anæmia, or chloro-anæmia are not only accompanied by general debility, but by constantly increasing emaciation, until the dyspepsia and uterine disease are properly treated. Even where no special pain exists the patient acquires a very characteristic attitude, constantly stooping forwards, the head and limbs bent in a manner usually seen only in old age. The features are drawn and have a look of suffering, which is all the more striking because the patient is

so thin; the flesh is soft and flabby, the countenance wanting in expression, the complexion pale and faded, especially where there has been long standing and abundant leucorrhœa; this paleness with loss of flesh and earthy complexion is different from the colourlessness of anæmia, the sickly green hue of chlorosis, and the pale yellow of cancer. It is to this very characteristic appearance that we give the name of *facies uterina*.

Emaciation does not always exist; on the contrary, there is sometimes corpulency. This is chiefly the case among those women in whom amenorrhœa takes the place of leucorrhœa or hæmorrhage; and the constitution seems to get accustomed to the change. Is it possible that the blood which should have formed the catamenia is used up in the economy to produce this unhealthy stoutness? We cannot affirm that it is so, but there is no doubt of the embonpoint which becomes obesity, and which leads some women to believe themselves pregnant; whilst others, when suffering greatly, are forced to listen to the congratulations of friends on their excellent health. As the uterine disease becomes cured this unhealthy stoutness disappears, and with it its various accompanying discomforts. Should the obesity persist it may be treated by vapour baths, resolvents, tonics, exercise, diet of roast meat and green vegetables, in addition to the administration of *fucus vesiculosus*, and these measures will generally bring the body back to its normal condition.

Local Symptoms.—These are found in the neighbouring organs, or in the uterus itself or its appendages.

1. *In the neighbouring organs.*—The rectum and bladder will almost always be found affected.

A. *Functional derangements of the rectum* may accompany disturbance of the rest of the alimentary canal. Though frequent they do not always exist; and sometimes instead of resulting from uterine disease they may produce it. If coincident, the two react upon and aggravate each other. Many women who are habitually constipated have diarrhœa just before the menstrual period, or during its course. Though this symptom requires no treatment it is worthy of notice, as showing the close inter-dependence of the various pelvic organs. Another very important point is habitual constipation, which is so common among women that in certain cases it may be looked on as the cause of the uterine malady. We must therefore find out whether the constipation was habitual and to what extent it existed before the disease of the womb. There are cases in which it has neither increased nor diminished since that period, in others it has increased so much that it helps to keep up and continue the uterine disturbance by the irritation and congestion which it causes in the pelvis.

Constipation does not necessarily accompany uterine disease. The derangement of the digestive functions may produce diarrhœa; but this is not common and is generally followed by constipation. Constipation is all the more frequent because it may be perpetuated by a mechanical cause. In prolapsus and various displacements, especially retroversion and retroflexion, as well as in cases of tumours (whether

uterine, periuterine, or ovarian), the rectum suffers from pressure which impedes the circulation. In cases of metritis, uterine catarrh, ovarian or periuterine inflammation, congestion of the rectum is not due only to blood stasis but to an extension of the inflammation, in which case diarrhœa sometimes alternates with constipation. However, the first effect of congestion is generally obstinate constipation, which is one of the most common and most serious symptoms of every uterine disease. The mass of hardened scybala can be evacuated only after enemata and repeated efforts, and the fæces are often coated with mucus, a sign of enteric inflammation. The constipation may last for two or three weeks or end in painful diarrhœa with tenesmus, lasting several days; and sometimes even this will not occur without the use of purgatives. The accumulation of fæces and consequent distension of the intestine bring on a kind of paralysis, the retained mass becomes partly decomposed and some of its elements may be reabsorbed. The effect of this form of blood poisoning, to which Barnes gives the name of *Copræmia*, may be seen in the sallow, dirty hue of the skin, the ill-smelling cutaneous secretions, in dyspepsia, flatulence, pyrosis, and in fact in endless disorders of nutrition and innervation. Sometimes the paralysis and obstruction of the intestine go so far as to resist all treatment; I have seen several women die from simple constipation. In spite of constipation the sufferer may be tormented by an urgent desire to go to stool, owing to pressure being exercised on the rectum by the uterine tumour. This desire becomes so strong that women make violent expulsive efforts, the only result of which is the excretion of some bloody mucus, with tenesmus and intolerable straining. In this way habitual constipation increases uterine disease both directly and indirectly. It almost always leads to hæmorrhoids, anal fissure, contraction of the sphincter and violent pains during defæcation, which may persist for a long time afterwards. Such violent efforts cannot be made without painful reaction on the uterus, and the patient dreads the effects so much that she is apt to let the constipation go on unless constantly watched.

B. *Derangements in the functions of the bladder and urinary system* are various. The urine is often clouded, especially in the case of patients who have a displacement or hypertrophy of the uterus, which then presses on the bladder or urethral canal; particularly when any new irritation arises in the womb, or an increase of old inflammatory symptoms reacts on the bladder. Patients usually complain of frequent desire for micturition, often accompanied with dysuria and sometimes with strangury and hæmaturia.

The bladder in fact often shares the morbid condition of the uterus; there may be congestion or even inflammation, and perhaps catarrh of the mucous membrane; the urethra may be red, swollen and bleeding; the meatus congested and inflamed, and sometimes the seat of small vascular tumours of which I shall speak subsequently. Any pressure on the bladder from the abdominal or pelvic viscera is very painful. The state of the urine corresponds to these morbid conditions and requires examination. We find more or less viscous,

flaky, mucous, or muco-purulent deposits, which may coincide or alternate with deposits of white powdery triple phosphates. These muco-purulent and saline deposits are signs of vesical catarrh which often accompanies uterine catarrh. Is Aran right in thinking that much of the pain felt by women suffering from uterine disease is due to these deposits and to the irritation caused by their presence in the bladder and their passage through the urethra? Catarrh of the bladder with irritation and inflammation of its mucous membrane and that of the urethra is a still more likely cause of much suffering.

Sometimes the abnormal condition of the urine is due to the kidney itself. The secretion may not only be very much increased under the influence of violent pain or hysteria, giving rise to the excretion of a large quantity of transparent "nervous" urine, but the secretion may itself be altered, containing brick-red deposits of uric acid or urates. There is sometimes a tendency to the renal lithiasis to which I have already called attention as being coincident with hepatic lithiasis. In these cases, it seems to me, there is a rheumatic if not a gouty diathesis.

II. *Symptoms in the uterus*.—It is desirable to ascertain at once how the various reproductive functions have been performed, especially menstruation and pregnancy. As regards menstruation, we must learn the date of its appearance, the character of each monthly period and its frequency and duration, the quantity of the discharge, and the presence or absence of pain, with any particulars relating to the menopause. If dysmenorrhœa has existed from the first it suggests mechanical obstruction, whereas if it supervened after marriage or after miscarriage it is more probably due to cervicitis.

It is important to learn everything relating to *previous pregnancies*, as well as to each delivery.

Sterility is a fact of still greater importance in the history of uterine disease. If a woman has been married for several years without having become pregnant the probability is that something is wrong; there may be some malformation, or the sterility may be due to functional disturbance or to disease. In nine cases out of ten I have discovered the cause of the sterility in a malformation, or in a morbid condition of the cervix, and very frequently I have been able to remedy it.

Uterine symptoms are of two kinds—pain and excessive discharges.

Pain is the cry of the suffering organ. Of all local symptoms it is the first to attract attention. It is, however, sometimes absent; but even in such cases it can be elicited by slight causes, and it is always of great importance. We must study pain from three points of view—1. Its form of expression. 2. Its seat. 3. Its type. When studying its form and mode of production we must distinguish between spontaneous pain and that artificially elicited.

Spontaneous pain is rare if we limit the term to pain caused directly by organic disease, but we ought to include pains induced by changes of posture which give rise to tension. Spontaneous pain does, however, occur frequently enough, even when the patient is in bed with all the muscles at rest and with no exciting cause dependent on neigh-

bouring organs. Such pain is almost always the symptom of acute disease and generally of inflammation, such as occurs in acute hyperæmia, congestion, metritis, or ovaritis (whether puerperal or not), but most especially in perimetritis and hematocele. In some cases this pain persists, even after the disease has passed into a chronic state; but as a rule spontaneous pain, strictly speaking, disappears at this stage, and is only excited by pressure or concussion dependent on movements. Although patients generally suffer least when in bed, there are instances where less pain is felt when walking or standing. When the dorsal decubitus causes pain we may suspect retroversion, retroflexion, a tumour, or a retro-uterine hematocele. Many patients suffering from chronic metritis or congestion, or even from simple hypertrophy with relaxation of the uterine ligaments, experience considerable pelvic pain when lying down, especially if the bed slopes downwards towards the foot. I have known several invalids who, not content with making the bed quite horizontal, have instinctively taken the precaution of placing a pillow under the nates, so that, the pelvis being higher than the shoulders, the uterus escapes all pressure from the abdominal viscera. The lateral decubitus, with semi-flexion of the limbs, is sometimes adopted to avoid the pain referred to, but this lateral position may cause other pains. If these are felt on the side on which the patient is lying the lesion will be there also, whether its seat be in the ovary, uterus, or connective tissue, the pain being produced by pressure on organs extremely sensitive from their pathological state and exposed by their position to pressure from neighbouring viscera. If, on the contrary, pain is felt in the other side, it is due either to the dragging of the diseased uterus on the ligaments and appendages of that side, or to an inflammatory condition with abnormal adhesions, in which case it may depend on dragging caused even by the weight of a healthy uterus. Some patients find that the least fatiguing position is that of pronation—either lying on the stomach or on elbows and knees; this is almost a certain sign of retroflexion. Spontaneous pain may be felt more in sitting than in lying, as in cases of uterine hypertrophy, hematocele, or perimetritis. The patient cannot remain seated for long without experiencing a painful sensation at the anus and perinæum similar to that caused by hæmorrhoids, urgent desire to go to stool, or a disagreeable and sometimes burning heat in the perinæum with a feeling of fulness and weight in the pelvis. These pains sometimes become so intense that the patient, not being able to remain sitting in the ordinary way, will rest in Turkish fashion, or throw the weight on the heels placed below the opposite tuberosities, or finally lie down to escape this discomfort. Sometimes the sitting position makes the patient feel as if a hard body pressed on the anus or perinæum; at other times it is as if such a hard body pressed painfully upwards on the uterus and abdominal viscera. This sensation may be felt under various circumstances, especially in pelvic peritonitis; but I have often seen it when the uterus alone was affected; it is rarely absent with hypertrophy of the cervix, especially when this coincides with fungous granulations or metritis. In such

cases the sufferer not only avoids sitting long, but takes great care not to sit down abruptly, knowing that by so doing she would produce the pain I have just described, which may be so severe as sometimes to induce syncope.

Standing seems to cause pain which neither the position nor the special disease can always account for. In cases of displacement, it is natural that standing, like walking, should cause a troublesome dragging on the ligaments or painful pressure of the displaced or prolapsed uterus on neighbouring organs; but in other cases, such as leucorrhœa, one cannot connect cause and effect. Whenever the uterus or the ovaries are affected, they necessarily become more sensitive, and they are sure to suffer simply from the weight of the abdominal viscera. It may be in this way that standing causes pain. In walking the weight of the viscera probably comes now on one and now on another part of the pelvis; while in standing the suffering uterus bears the whole pressure continuously, and consequently many women prefer walking to standing.

However, in the majority of chronic uterine diseases, walking and other physical exercises cause the most violent pain. It is needless to add that in cases where pain is felt when the patient is at rest, it becomes much more severe when she walks or otherwise exerts herself. Walking so generally causes pain that many women suffering from uterine disease lose the habit of walking. Others can walk in the house or on a smooth flat path, but suffer as soon as they try to walk on a rough road, or feel the vibration caused by a false step or even by going down stairs. This is especially so in cases of metritis and perimetritis, when the slightest shake is felt painfully and causes the patient instinctively to put her hand on the hypogastrium. It is easy to understand how much more certainly pain will be produced by other and more violent exercises, such as dancing, riding, driving, &c. I have seen patients suffer terribly after a little waltzing, and have known others obliged to give up riding because it excited pain. Travelling by railway, though better borne as a rule than driving, sometimes causes great discomfort, the continual vibration producing mental as well as physical excitement and uneasiness.

With other patients uterine pain is provoked by movements of the arms, as in sewing or playing the piano; these actions often causing a painful reaction in the hypogastric region and throughout the body.

Coitus produces pain in many women by a complex process. The physical movement, shock, orgasm, all unite in bringing about the result. We must ascertain whether pain is produced by intromission, depending on vaginitis, fissure, spasm, or contraction of the vulva; or by the shock against the uterus causing a direct effect upon this organ and the surrounding tissues. Sometimes, though no pain is felt at the moment, great general fatigue, as well as throughout the pelvis, is experienced the following day. As a rule these invalids avoid sexual intercourse, either on account of the suffering it entails or because of real uterine inertia. But besides causing pain intercourse

may become very difficult and in some cases impossible. Barnes¹ considers this symptom of difficulty so important that he has given it the name of dyspareunia, a word by which household troubles were often signified by the Greeks. Dyspareunia may depend on (1) vaginismus, *i.e.* spasm, either direct or reflex, of the constrictors of the vulva and vagina; (2) pain; (3) chronic nervous irritability due to a first coitus having been incomplete or awkwardly performed; (4) pain caused by inflammation; (5) embarrassment; (6) tumours; or (7) malformations, imperfect development, imperforate hymen, narrowness of vagina, &c., in short, whatever the cause may be the symptom is one that necessitates a direct examination.

Tight dresses even when worn for a short time only have their influence in causing pain. Cruveilhier long ago pointed out the effects produced by tight lacing on the form and position of the abdominal viscera; and we can easily understand how the compression of these organs and their pressure on the diseased uterus or ovaries may cause intolerable suffering. An abdominal belt on the contrary raises and supports the viscera. Indeed, stays are often voluntarily relinquished before consulting a doctor.

We must next ascertain whether *pain can be elicited artificially*. This is necessary with all patients in order to determine the seat and exact starting point of the pain; but it is specially important with those who, from special idiosyncrasy or from a hard and laborious life, are not sensitive to pain. The simplest plan is to ask the patient to make the movements likely to cause suffering. A woman who is seated in an easy chair may assure us in good faith that she has no pain whatever; but ask her to rise and walk across the room, or lift a piece of furniture, and she will be conscious of suffering immediately. As a rule, it is by manual examination that we learn the seat and degree of pain. Abdominal pressure, digital examination by the vagina and rectum, separately or all combined, will generally elicit dull latent pain. Abdominal pressure may be made when the woman is either standing or lying, if standing she ought to lean forward, if lying the knees ought to be well drawn up, so as to relax the abdominal muscles; a gentle but continued pressure must be made with the tips of the fingers over the hypogastric and iliac regions as well as in the groins. If pain is elicited by pressure, we ought to verify our diagnosis while the patient is standing, by placing the hand transversely on the hypogastrium above the pubis, lifting all the abdominal viscera towards the diaphragm and letting them fall abruptly; repeating this manœuvre two or three times. If the patient feels relieved when the viscera are lifted up and experiences pain when they fall, we are able to determine the existence, seat, and often the cause of the pain, and can also estimate the utility of a hypogastric belt to support the abdomen.

During vaginal and rectal examination the tip of the finger may press on the neck or body of the uterus, or on the ovary; or, again, on a peri-uterine tumour, to determine whether it is solid, sanguineous,

¹ *Diseases of Women*, 2nd edition. London, 1878, p. 65.

or purulent. If this pressure does not cause suffering, a slight shock, as in practising balottement to diagnose pregnancy, may elicit pain. At other times abdominal palpation must be associated with vaginal or rectal touch before we can determine the exact seat of suffering, which is sometimes in the ovary, sometimes in the uterus, and sometimes in a retro-uterine tumour. In any case it is very important to elicit pain. When felt it is impossible for the patient to conceal her disease or to ignore its existence. It is, however, necessary to point out an error into which we may fall. Some patients, especially young girls who are unaccustomed to the contact of a foreign body in the vagina, partly from sensitiveness, shrink with alarm and fear from the slightest touch, sometimes crying out as if in pain. If this occurs just as the finger touches the uterus the physician is all the more likely to be led astray; he must remember that, apart from the sensitiveness of the patient, this apparent manifestation of pain may be owing to the shock or (so to speak) to the surprise of the organ; if he continues the examination gently and patiently he will generally succeed in discovering the real seat of pain.

There are *six seats of pain*—three principal and three accessory. The *three principal seats* are—1, the iliac regions; 2, the loins; and 3, the hypogastrium.

1. *Iliac pain* is the most common; it corresponds to the iliac fossa, spreading towards the hypogastric and lumbar regions, but especially towards the pelvic brim and cavity. This pain must not be confounded with true lumbar pain, nor with intercostal neuralgia, which patients so often complain of below the breast. The mistake is the more easily made, as both kinds of pain are generally felt in the left side. Iliac pain is described by patients as pain in the side; as a rule this is a pathognomonic symptom of uterine disease. Aran thinks it is generally due to inflammation of the ovary or appendages. Many cases may be explained in this way, but not all, because ovaritis is not limited to the left side. I think it can be accounted for in another way; just as pain in the back may arise from tension of the utero-lumbar ligaments, so may left iliac pain be produced by tension of the broad ligament. This may occur without metritis, ovaritis, or perimetritis. The uterus, in some morbid conditions, increases in size and weight; its normal inclination to the right being still more exaggerated, it necessarily drags on the left side of the broad ligament; this dragging is enough to cause pain, and may even produce perimetritis.

2. *Lumbar pain*, generally called “backache,” though less frequent than iliac pain, is yet very common, and often very troublesome. Sometimes it is confined to the renal region, or it may spread to the sacrum, or even to the abdomen; at other times it extends from the loins, where it reaches its *maximum*, down each side to the iliac regions and even to the hypogastrium and pubis, encircling the abdomen with a belt of pain and sometimes terminating in a violent uterine spasm. Its cause is as variable as its mode of manifestation. Sometimes it depends on the contraction of the utero-sacral ligaments, or possibly on their distension, from the descent or retroversion of the uterus; some-

times on congestion distending the ovarian veins and pampiniform plexus; or, again, it may be due to the accumulation of leucorrhœal mucus and to the contractions provoked in the uterus in order to expel it; sometimes it is caused by cervicitis, whether simple, granular, or ulcerative. Lumbar pain generally indicates disease of the cervix, whilst iliac pain (especially if associated with dyspepsia) is more frequently connected with an affection of the body of the womb or of one of the uterine appendages. Sacral, like anal pain, is suggestive of retro-flexion, or of a retro-uterine tumour.

3. Hypogastric pain has its seat immediately above the pubis, and seems, more than any other, to have its starting-point in the body of the uterus and to be dependent on an inflammation of that organ. It appears when artificially elicited rather than spontaneously. Many patients, also, who do not complain of it at first, feel it as soon as pressure is applied to the abdomen. This symptom is never absent in uterine disease. Although this pain is seldom spontaneous, it is still very disagreeable to women; it interferes with their walking, or, if they do walk, they feel the necessity of supporting the hypogastrium with a belt, or they keep their hands in front, ready to protect themselves from the slightest shock which might occur. This pain must not be confounded with the sensation of dragging at the umbilicus (associated with sacral pain), which is often a symptom of retroflexion.

The *three accessory seats* of pain are—1, the anus or perinæum; 2, the vagina or cervix; 3, the cavity of the pelvis.

1. *Anal or perineal pain* is generally produced by pressure from a peri-uterine tumour, from the fundus of the retroflected uterus, or from the uterus itself, either hypertrophied or prolapsed. I have already referred to patients affected with hypertrophy of the cervix, who suffered pain at the anus and perinæum, not only in walking and riding, but when sitting. 2. *Vaginal pain* is less frequent. In certain acute diseases the uterine pain extends to the vagina, but it is more often due to the development of peri-uterine disease, especially if such disease is of an acute or inflammatory nature. In this way hæmatocele, retro-uterine peritonitis, peri-uterine inflammation, or abscess, sometimes produce in the vagina heat, swelling, or sharp throbbing pain extending to the vulva, which may become excruciating. In chronic disease this pain is often not felt unless artificially elicited. 3. *Pelvic pain* is usually the symptom of peri-uterine disease, or of cystic or solid tumours of the ovary or uterus. In acute peri-uterine diseases such pain may be violent and accompanied with throbbing and a sensation of distension; in chronic diseases it is dull and heavy.

Radiating pain is chiefly pelvic. Iliac pain extends to the groins, either along the round ligament or by the ilio-pubic branch of the lumbar plexus. In this case the radiation assumes a neuralgic character; there is an iliac centre, an abdominal centre, and one in the labia majora. Lumbar pain radiates oftenest along the course of the sciatic nerve. This radiation, like neuralgic pain, is occasional and intermittent; but it may be more frequent, prolonged, and even con-

tinuous, if dependent on direct compression of one of the sciatic nerves by a uterine, ovarian, or pelvic tumour. The hypogastric pain, like the iliac, sometimes extends to the groin, but oftener to the upper part of the thigh, following the divisions of the obturator nerve, or extending along the anterior aspect to the knee, and sometimes below it, following the branches of the crural nerve. The other pains, whether sympathetic or reflex, are not simple radiations; they have already been referred to under the head of general disorders of the nervous system.

Pain may be of a continuous or an intermittent type. *Continuous pain* varies in intensity according to the individual and to the disease. It is worthy of remark that the most painful diseases are not always the most serious, and that certain incurable diseases, such as cancer and epithelioma of the cervix, may be developed without producing symptoms fitted to arouse the anxiety of patients. Hence the physician is almost always consulted too late to be able to do more than palliate suffering; whereas if called at the commencement he could have removed the diseased portion of the neck by the knife or cautery and so frequently might have saved life. Cancer itself, whether of the neck or of the body, does not cause suffering until ulceration begins; on the other hand, acute inflammation, neuralgia and catarrh often produce most violent pain. The intensity of pain is not always proportioned to its acuteness. There are kinds of pain which are intense but dull, giving the sensation of a weight, a distension, a numbness in the various regions I have described, and especially in the pelvis and along the pelvic nerves. There are others of a burning or lancinating character, resembling neuralgia, but less persistent, appearing and disappearing in proportion to the pressure exercised by the uterus on the ramifications of the crural, obturator, or sciatic nerves, this pressure depending on the posture adopted by the patient.

Intermittence of pain depends on three principal causes:—Intermittence is often characteristic of neuralgic pain. The neuralgia which accompanies uterine disease may, like other neuralgia, cease after a certain time, or even acquire the character of periodicity. The sudden attacks and exacerbations which are often observed in chronic uterine diseases, especially in those of an inflammatory nature involving the peritoneum and accompanied by suppuration, may also explain the occurrence of intermittence. Such crises are often dependent on disorders of menstruation, and each monthly period may be the signal for an exacerbation of the disease and of pain. Or intermittence may depend on the very nature of the affection, and on the uterine contractions which are developed in the course of the disease. These contractions are painful. They are easily distinguished by the expulsive character they assume; patients complain of a sensation of something pushing downward, as in labour pains; young girls even can trace the connection, when their attention has been called to the coincidence, between these pains and the expulsion of a certain quantity of mucus or clots of blood. They are caused by an accumulation of mucus or muco-pus in cases of catarrh and leucorrhœa; by an accu-

mulation of blood in hæmorrhages ; or they may be due to stenosis of the os, or to polypi or tumours in the uterine cavity, which may produce local irritability and spasm.

Another indication is afforded by the character of the discharges from the vulva ; whether sanguineous, mucous or mucopurulent.

1. *Uterine hæmorrhage* is by no means an invariable symptom of disease of the womb. In some cases there is little or no derangement of the menstrual function ; but this is the exception. The recurrence of the monthly period may be tardy, or too frequent, or there may be intermenstrual hæmorrhage ; oftenest of all there is dysmenorrhœa with diminution in the quantity of blood. If the catamenia have never appeared, we must learn whether general and local symptoms recurring periodically may not have indicated the menstrual morbidness ; or there may even have been hæmorrhage within the uterus without any external discharge, the blood being retained from imperforate hymen, obliteration or deviation of the cavity of the cervix, or an occlusion of the uterine orifice. It is important to distinguish the cases in which there is retention from those in which the hæmorrhage has never taken place, and from those still rarer instances in which the uterus is wanting. I have seen an instance of the last kind, and also several cases where the uterus had no external outlet owing to the cicatricial obliteration of the vagina following upon gangrene after delivery. I have operated on several girls for imperforation of the cervix and have found menstruation subsequently take place regularly, and I have often seen menstruation entirely or partially obstructed by stenosis of the os externum or internum, or by anomalies in the position of the orifice or in the direction of the cervical canal. Fortunately, amenorrhœa is much oftener due to some functional disturbance or to a morbid condition of the general health, such as chlorosis or anæmia, and it must not be forgotten that amenorrhœa may possibly depend on pregnancy even in a woman who has never menstruated.

The next point is to ascertain whether the menstrual function is normally performed. In a number of uterine diseases the catamenia are excessive, in others defective. It is important to ascertain whether the quantity of blood habitually lost has increased or diminished. Differences are relative rather than absolute ; for one woman normally loses very little in comparison of another. The length of the period also varies, and in this respect we must take individual idiosyncracies into account. Some women may be in good health although the menses only last for a few hours, whilst in other cases they continue for twelve or fifteen days. The normal period of recurrence is also variable though in most cases the menses return every twenty-eight days ; in some women, however, the ordinary term is thirty, thirty-five, or even forty days, whilst in other cases it is reduced to twenty-five, twenty, or even fifteen days. We must carefully distinguish menstruation from simple hæmorrhage having no connection with the catamenia. Although uterine hæmorrhage may sometimes be accom-

panied by general and local symptoms which make a differential diagnosis difficult, yet the menstrual flow is generally marked by distinctive signs not confined to the uterus but involving the whole generative system, and accompanied by an unusual sensibility in the woman as well as other symptoms, varying in different individuals, but habitually characteristic of each; the whole being sufficient to prevent our confusing the physiological function with the pathological phenomenon, in spite of their single common element, the loss of blood. The general and local symptoms of the menstrual molimen are so marked that they can easily be diagnosed even when there is no hæmorrhage. Sometimes we see the catamenial molimen occurring in the intermenstrual period, accompanied by pain, local fatigue and reaction on the general system, which is all the more intense because not followed by a critical hæmorrhage that would give relief (see Chapter on Menstruation). It is no less important to have correct information as to the quality and colour of the blood discharged. Sometimes it is darker, sometimes paler, than normal. It may be so dark as to be almost black, with dense viscous consistence, or perhaps in a state of coagulation, being expelled probably at intervals rather than continuously. All this indicates that the blood is of venous rather than arterial origin, or that it is mixed with mucous secretions, or that it has been long retained in the uterine cavity owing to inertia or to constriction of the orifice. At other times the discharge is pale and thin, of serous or sero-sanguinolent nature, leaving on the linen a pale pink stain surrounded by a grey areola; this is symptomatic of chlorosis, uterine catarrh, &c. The blood may be fluid or may be expelled partly in clots. The size of these clots and the presence or absence of pain at the moment of their expulsion may indicate increased size of the cavity of the womb with inertia of its walls, or on the other hand, contraction with spasm and partial occlusion of the orifices. In short, menstruation may undergo many important changes. When these derangements are marked they are designated by the names of amenorrhœa, dysmenorrhœa, menorrhagia and metrorrhagia; these may be not only important symptoms in diagnosing a case, but essential morbid conditions which will be described as such in due time.

It must always be borne in mind that these different symptoms may not only indicate uterine disease, but possibly pregnancy, abortion, delivery, &c. While no one doubts the significance of amenorrhœa and hæmorrhage, dysmenorrhœa is treated as of less moment, in consequence of a common idea that many women suffer at their monthly periods who yet have nothing the matter with them; but this is a mistake; the more experience we gain the more we are convinced that dysmenorrhœa, especially when associated with dyspareunia and sterility, is invariably symptomatic of a mechanical obstacle to the excretion of the catamenia. We must learn all we can as to the history of these hæmorrhages, the frequency of their recurrence, whether they are spontaneous or elicited, if they occur in the morning or evening, whilst the patient is at rest or after exposure to fatigue, as in walking, driving, riding, and espe-

cially in coitus. A few drops of blood after congress, especially if associated with muco-purulent leucorrhœa, ought to make us suspect fungous granulations of the cervix, if not a more serious organic lesion, sometimes cancer.

2. *Leucorrhœa*, or the various discharges from vulva, vagina, or uterus, ought to engage our attention for two reasons—1. Because many patients do not mention this symptom to their doctor, thinking that all women suffer in this way. 2. As leucorrhœa is always abnormal its existence convinces us that a pathological change of some kind has taken place in the generative system. We must find out if these discharges are spontaneous, or if they are caused by walking, coitus, &c.; if they are insignificant or abundant, continuous or intermittent; if they cause inconvenience and are accompanied by fatigue, pain in the stomach, dragging in the loins and in the middle of the back. The peculiar characteristics of these discharges give us indications, and often point out to us with certainty their source and even the nature of the disease which produces them.

The normal secretions of the vulva, vagina and uterus are not continuous but intermittent, only taking place simultaneously with the performance of their principal functions—coitus, menstruation, pregnancy and delivery. They may also occur normally after any fatigue or excitement, whether local or general. When pathological, these discharges may retain their normal character, being produced simply by hypersecretion, or they may assume an abnormal nature, depending on some derangement of the secretion.

Simple hypersecretion.—The vulval mucus is transparent and viscid, with acid smell and reaction, presenting nucleated epithelium with fragments of pavement epithelium, the secretion being either continuous or intermittent, as the case may be. The vaginal mucus is a milky-white emulsion, not viscid, with acid reaction, continuous secretion, and a large preponderance of solid elements, giant cells of pavement epithelium predominating over the liquid elements. The uterine mucus is an albuminous liquid, very viscid and stringy, sometimes tenacious, closely resembling white of egg, often quite transparent, secreted intermittently, with alkaline reaction, containing cylindrical or ciliated epithelium with mucous globules or nucleated epithelial cells; the cervical secretion the most tenacious of all, and containing more ciliated epithelium than the mucus of the fundus. As to age, we must remember that vulval leucorrhœa is specially common in children, vaginal leucorrhœa more frequent in young women, uterine leucorrhœa, especially when cervical, most common in middle-aged and old women. The first is sebaceous (except the hypersecretion of the vulval glands of Bartholini); the second, epithelial (common or pavement); the third, mucous or nucleated.

Derangement of secretion.—The vulval discharge may become yellow, green, purulent, or, in mixing with hypersecretion of sebaceous matter, may form a magma, with strong, acid, cheesy smell, very irritating to the adjoining parts, which become excoriated. The vaginal secretion may become very thick, curdy, greasy (never viscid nor gluey), always

acid, or, on the contrary, very abundant, more fluid, mixed with pus, yellow or green or sero-purulent, like the pathological secretion produced by a blister excreted continuously, very irritating, and causing excoriation of the vulva and upper part of the inner side of the thighs. It is an undoubted fact that the vagina suppurates much more frequently than the uterus, which is in accordance with Virchow's remark that mucous membrane with cylindrical epithelium is slow to suppurate. The uterine excretion may become white, grey, yellow, even green, or streaked with yellow and white, of yellowish-green colour, partly transparent, always alkaline, more fluid, sometimes quite serous, but often tenacious, excreted intermittently and with the knowledge of the patient who experiences uterine colics as soon as the contractions of the organ expel the liquid, which is sometimes accumulated in large quantity in the uterine cavity and then falls into the vagina or on the vulva in one mass, as the white of egg would do. When the cervix is affected the mucus may become so gluey and tenacious that it adheres to the organ for a long time, and is only detached from it in a half solid form, similar to the cervical plug of pregnancy. To these characteristics, of which intelligent patients are well aware, we may add those furnished to us by stains on the linen, of which I shall speak when giving the diagnosis of leucorrhœa.

Mixture with another liquid, normal or pathological.—The discharges may become serous or sanguineous, which is almost always the indication of a serious derangement of the secretion, of superficial ulceration with exudation, or of the existence of an ulcer, granulations or fibroma, or of some organic lesion. They may become sero-purulent, purulent, ichorous, with fetid smell, the latter too often the indication of a cancerous affection. I have never been mistaken as to that smell, to which sufficient attention is not paid. When the utero-vaginal secretion has accumulated owing to the presence of a pessary, and is heated, it has a foul smell certainly, but only that of acid fermentation or heated pus, which all surgeons notice on laying bare a wound when an abundant suppuration has been retained by the lint dressing; the smell of suppurating cancer, on the contrary, is nauseous, stale rather than acid, somewhat similar to macerated animal matter, often noticed at a distance, or as soon as the dress of the patient is removed. At other times the discharges assume a character of liquid transparency, and are called watery discharges, hydrorrhœa, hydrometria (See this word). They may have different sources, as we shall see when we come to consider leucorrhœa. These watery excretions are sometimes of no moment; at other times they are symptomatic of serious diseases, such as an ovarian cyst, epithelioma, &c. The variety of pathological fluids is great. There are others to which I have not yet referred, because there is much about them of which we are still ignorant. I mean those fluids produced by gaseous excretions or physometria (See this word). We must beware of the rather frequent accident of the introduction of air by the syringe into the vagina or uterus, or of the facility with which the vagina opens and sucks in atmospheric air during pronation in some women after delivery, or of the less common

accident of a recto-vaginal fistula, which, though too small to admit the passage of the feces, allows intestinal gases to pass; but, apart from these accidents, gas may be developed in the vaginal cavity and even in the uterus so as to distend it. This symptom, called physometria, may be caused by putrid decomposition of fragments of fœtus or placenta, or by decomposition of uterine secretions when abundant and retained by some cause in the womb.

Lastly, *discharges may produce a sensation of pain*, which though not common is very intense when present. I have already spoken of excoriations on the labia and thighs; but in addition to this, there is often, especially in women who have passed the menopause, an intolerable vulval pruritis. This pruritis is often coincident with a vaginal excretion, and may be due to want of cleanliness or to a disease of an inflammatory, syphilitic, pruriginous, or herpetic nature. In such cases the vagina is almost always painful, covered by an erythematous eruption, and sometimes excoriated. The pruritus, however, often exists alone as the effect of a peculiar nervous erethism depending directly or indirectly on the uterine disease, especially when not accompanied by any eruption, and when it does not yield to a solution of bicarbonate of soda or to local applications of tar or tannic acid.

CERTAIN SIGNS FURNISHED BY DIRECT EXAMINATION

By the time we have reached this stage we have often more than the presumption, we have almost the certainty, sometimes we have the complete certainty that the patient before us is affected by uterine disease. We can easily lead her to share this certainty and to see the necessity for a direct examination. Methodic interrogation has enabled us to diagnose uterine disease; a direct examination will enable us to make a differential diagnosis. The means of investigation at our disposal are, palpation, the touch, the speculum, the sound.

1. *Abdominal Palpation*.—This is the simplest means of investigation at our command and therefore the one we ought to employ first. It is a kind of modified touch exercised by the whole hand, or part of it, through the abdominal walls. The form of the abdomen should be noticed, and the patient should be made to change her position so that we may ascertain if there is fluctuation. The other means of external examination are percussion, auscultation, the exploratory puncture, mensuration, &c.

Palpation.—Palpation should be practised in two ways; when the patient is standing and when lying. It matters little whether we begin with the one or the other. If the patient goes to the consulting room of her doctor, it is natural to begin with vertical palpation; if on the contrary she is obliged to keep her bed and sends for the doctor he begins with horizontal palpation. In whatever order we take them, the combination of these two modes of palpation in two different positions, is more important than would appear at first

sight ; each position helps us to discover certain symptoms which we could not otherwise have made out.

The patient being in the erect posture, her back supported by a piece of furniture or by the left hand of the physician, the right hand is placed over the epigastric or umbilical region ; when exploring these regions with the palm of the hand their temperature should be observed. Gradually and methodically the hand is brought down, going from right to left, any change in the form and size of the abdomen being noted which may be dependent on a tumour connected with the uterus or ovaries, or on an increase in the size of the womb or its appendages, or to a fluid or semi-fluid effusion in the peritoneum or pelvis, or merely to distension from a tympanitic condition of the bowels, very common in uterine disease. Above all, the size and sensitiveness of the various parts of the hypogastrium and pelvic cavity should be ascertained ; and to do this, we must ask the patient to lean forward, so as to relax the abdominal muscles. In depressing the teguments with the tips of the fingers we often elicit sharp pain immediately above the pubis, or on the inner side of the left iliac fossa, at the transverse diameter of the brim. These pains, together with tumefaction of this region, leave little doubt as to the existence of an inflammatory disease of the uterus or ovary. Any increase in the temperature of the hypogastrium ought to be ascertained at the beginning of the examination as this is an additional sign in favour of the supposition of chronic inflammation of the uterus, its appendages or surrounding tissues. We should also take advantage of the upright position of the patient to obtain another indication which is too often neglected, although valuable to the physician both as regards diagnosis and treatment. Instead of pressing down the abdominal parietes towards the pelvis as at first, we raise the mass of viscera, so as to drive them upwards and backwards towards the diaphragm ; then we let them fall down abruptly. By repeating this little manœuvre two or three times we ascertain whether the pressure exercised on the uterus by the weight of the viscera is a cause of pain, and consequently we can determine whether an abdominal belt, preserving the uterus from this painful pressure will be helpful to the patient. When on the couch the patient should be on her back, the legs bent on the thighs, the thighs on the pelvis and slightly apart, the head raised by a pillow so as to relax the abdominal muscles. Whilst making the examination it is well to speak to the patient so as to distract her attention, for many women, from modesty or from sensitiveness, contract their muscles so firmly when touched, that it is impossible to proceed. When the patient is lying, we are able to depress the abdominal walls much more than when standing, and so can better ascertain the more deeply-seated changes ; not only those due to uterine tumours, fibromata, ovarian cysts and pelvic tumours, but those also which have their rise in disorders of other organs, such as the kidneys, the ureters, the bladder, the small intestine, the cæcum and the ascending colon. In this way it is possible to distinguish a mass of stercoraceous

matter in the sigmoid flexure, which has sometimes caused so much pain as to have led to errors of diagnosis. In this investigation of abdominal and pelvic tumours by palpation it is not sufficient to ascertain the differences in size, form, sensibility, and position of the different organs; we must also learn to distinguish differences in consistency and in resistance to pressure presented by these viscera or by tumours. A single finger will sometimes appreciate these differences better than the whole hand. In this way may be ascertained the transmission of arterial pulsation, vascular or respiratory vibrations, intestinal gurgling, the depressibility and molecular mobility of the contents of some tumours susceptible of displacement, the stony, cartilaginous or fibrous hardness of others, the softness of a certain number, the resistance of abscesses or cysts, &c. I do not mean to say that palpation alone will enable us to diagnose small mobile tumours, or even to elicit pain in inflamed organs, which recede from pressure as the uterus does when not too large and not retained by adhesions. But associated with vaginal touch palpation is one of the most certain and most valuable means of diagnosis. When practised on the hypogastric and lateral regions of the abdomen by pressing the pelvic organs down, it brings them nearer to the exploring finger and sometimes indeed enables the examiner to hold them between the finger introduced into the vagina or rectum, and the hand which depresses the abdominal parietes. The fundus, the Fallopian tubes, the ovaries, mobile pelvic tumours, the posterior side of the uterus, would escape investigation if vaginal and rectal touch were not complemented by abdominal palpation and even exceptionally by another mode of examination to which I shall afterwards refer under the name of rectal palpation.

One last remark: before abdominal palpation is practised the bowels should be evacuated by an enema or laxative, and the bladder naturally or by catheter, otherwise it will not give us the certain information that we require.

The complementary means of external examination are: percussion, quest for fluctuation, change of posture, auscultation, observation as to the appearance and shape of the abdomen, an exploratory puncture, and mensuration. These are practised when the patient is lying.

Percussion of the different regions of the abdomen, and especially in those parts where there is abnormal tumefaction, enables us to detect the presence of foreign bodies, whether gaseous, solid or liquid, and to determine the exact limits of a tumour of the uterus or ovary (left undecided by palpation), to discover their inequalities, and recognise other complications, &c.¹

¹ *E.g.* percussion enables us to perceive tympanitic resonance of the intestine at the highest part of the abdomen near the umbilicus, or on the contrary at its most dependent parts the flanks, an essential distinction in diagnosing between ascites and an encysted tumour; it limits the bounds of a solid or fluctuating tumour; it enables us to ascertain the presence of dulness in the most dependent parts (ascites), or above the pubis, uniformly in the centre, with fluctuation, (vesical tumour, retention of urine), or in the hypogastrium sloping downwards with irregular surface, &c. (pregnancy, hypertrophy of the uterus,

Examining for *fluctuation* is not less important in some cases ; it enables us to discover effusions which may be in the lower part of the peritoneal cavity and helps us to diagnose an ovarian cyst, and to ascertain whether it is simple or multilocular, partly liquid and solid, whether complicated with ascites, &c. The association of percussion and even auscultation with this mode of examination leads us to discover the characteristic hydatid thrill, and so distinguish an acephalocystic tumour of the pelvis or omentum from any other kind of tumour. In certain cases palpation must be associated with digital examination in order to discover fluctuation, the finger of one hand resting on the most dependent part of the vaginal tumour, while the other hand depresses the hypogastrium firmly. Short taps on this region made by a finger of the same hand are transmitted by the liquid to the tip of the finger within the vagina.

Changes of posture and shocks given to the abdomen are useful after percussion and palpation in giving additional information. In order to discover dulness, resonance, fluctuation and the various sounds which are recognised by auscultation we must examine the patient, not only when she is standing and lying, but also on the back on each side in pronation, and even on elbows and knees, as Bozeman does for the operation of vesico-vaginal fistula. Nothing is so useful as these changes of posture in displacing peritoneal effusions and solid tumours attached to the broad ligaments or to the mesentery, or in changing the relationships of organs or abnormal products.

When these changes of posture are not sufficient to enlighten us as to the weight and consistency of organs and as to the presence of solids, liquids and gases in the abdomen, we may be able to throw light on the diagnosis by *concussion*, which communicates a balottement, more or less considerable, to all the abdominal viscera. This balottement, as well as changes of posture, may help us greatly in diagnosing the case, not only because of the impressions transmitted directly to the physician, but because of the new sensations which it causes to the patient.

Auscultation is especially useful when we have to distinguish between pregnancy and a uterine or ovarian tumour. When the uterus contains a living foetus we can generally hear the foetal heart as well as the uterine souffle. The existence of the heart sounds in an abdominal tumour, more or less lateral and not dependent on the uterus, which is relatively defective in development, ought to lead us to diagnose extra-uterine pregnancy. This question should always be determined before forming a diagnosis of an abdominal tumour. In auscultating cases of ovarian tumours or of uterine fibromata compressing the aorta or the iliac arteries, a souffle can almost always be perceived on one side analo-

fibroma, &c.), or on one side of the pelvis extending to a more or less elevated part of the iliac fossa (tumours of the broad ligaments or ovaries), or at the most elevated part of the abdomen, with or without fluctuation and with tympanitic resonance in the flanks (cysts, cystosarcomata, solid tumours of the ovary).

gous to what is called the uterine souffle. This sound is often perceived on the surface of the tumour and evidently arises from the great vessels which traverse it, whether it be due to an ovarian cyst or to the distension of the uterus by an enormous fibroma; it depends probably on the compression which the volume of the tumour exercises on these vascular trunks at some point, and is an indication of their great size. Auscultation also enables us to distinguish intestinal gurgling, tympanitic resonance, peritoneal friction sounds, &c.

The *external appearance* of the abdomen gives the physician an opportunity of receiving impressions which palpation alone would not have afforded. We not only note the changes in colour and appearance of the abdomen, the umbilical depression, the pigmentation of the linea alba, presumptive signs of a commencing pregnancy, the vibices due to the distension of the belly by a previous pregnancy, ascites, or a tumour, wrinkles, cicatrices, marks of chafing, &c., but it enables us also to detect the slightest change in the form of the abdomen. The patient ought alternately to be standing and lying, especially lying on the back. In this position we can easily distinguish the general swelling due to meteorism; the peculiar tumefaction of the sigmoid flexure, colon or cæcum, due to constipation; the vesical tumour caused by retention of urine; the uterine tumour of pregnancy; the more limited protuberance of a solid tumour of the womb, ovary, or broad ligaments; the prominent tumour, raising the umbilicus and even the xiphoid cartilage, caused by the enormous distension of an ovarian cyst; the iliac or hypogastric puffiness accompanying perimetritis; lastly, the increased size of the belly in the flanks and in the iliac regions due to ascites.

The *exploratory puncture* is of the same utility in diagnosing tumours of the genital organs as of other parts of the body. It determines the consistency and nature of the contents of the tumour by the issue of a drop of liquid or of a solid particle. It may be applied not only to the abdomen and to the external organs of generation, but also to the vagina, to the posterior vagino-uterine *cul-de-sac*, to the uterus, or to tumours of its cavity.

As the complement of palpation, *tapping* is even more useful than an exploratory puncture. Evacuation of the tumour helps us in the same way that evacuation of the bowels and bladder does. I do not say that this is necessary in order to diagnose the existence of an ovarian tumour, but it is impossible to ascertain the peculiarities of its form and composition, the complications and adhesions, unless the evacuation of the cyst permits the examination of the empty sac and its appendages by means of palpation (associated with touch), the abdominal parietes being now as easily depressed as they were distended formerly.

Mensuration frequently repeated is useful in determining the changes of size. We must measure the circumference of the abdomen carefully with a tape, and always from the same points, using the precaution of taking measurements from several points, in different

directions (horizontally and vertically), before and after practising the exploratory puncture.

2. *Digital touch*.—All practitioners agree in giving to digital touch the first place as a means of examination; it is all the more valuable as being the one which causes least distress to the patient, owing to our being able to employ it without uncovering her. I insist on the capital importance of digital examination for two reasons. The first is because it has been neglected since the discovery of the speculum. Now, I have seen so many women affected by serious uterine or peri-uterine disease which their physicians, nevertheless, had failed to discover, because they had only examined them with the speculum, that I cannot too strongly warn practitioners of the danger of abandoning touch for the speculum, which can do no more than correct and complete the information given by the touch. The second is my hope of persuading young practitioners to practise this mode of examination. Now, in order to be able to do so, or indeed to make any other examination profitably, it is not only dexterity that is required, we must also have an exact knowledge of the sensations due to a normal and an abnormal condition of the organs explored; this knowledge is only acquired by habit, and I can assure all young practitioners who wish to perfect themselves in this mode of investigation, that they will be surprised to observe what constant progress they make. Digital touch, like abdominal palpation, is practised when the patient is standing or lying; in England the usual position is on the left side. In most cases it is indispensable to examine the patient by touch when she is standing. It is often the only means of reaching the cervix in girls, as with them the uterus is generally very high up. It is the same with tall women who are stout, because the cellular adipose tissue, which lines the perineum, shortens the examining finger; the vertical position is sometimes insufficient to enable us to reach the cervix, unless the patient makes an expulsive effort which forces the uterus downwards. The vertical position facilitates examination of the cervix of a pregnant woman, as well as that of a uterus containing a fibroid tumour; in both of which cases the womb rises above the pelvis as Simpson has pointed out. This mode of examination also helps us to practise balottement and to appreciate the weight of an inflamed or hypertrophied uterus which may be an important element of diagnosis. Lastly, this alone can give exact information as to elevation, descent, displacements or flexions of the womb; for all these displacements are modified by the horizontal position. When making the vaginal examination in the erect posture the patient ought to have her back against a piece of furniture, the legs slightly apart, the body leaning forward so as to relax the abdominal muscles, the hands on the back of a chair. The physician on a low seat, or on his knees, introduces the right hand under the dress of his patient, having previously anointed the index finger, so as to preserve it from infection, as well as to facilitate its introduction. He follows the line of the right thigh and tries to reach the posterior commissure of the labia, endeavouring to avoid the anus behind and

the clitoris in front in order to save the patient the annoyance of having these sensitive organs touched. Contrary to the advice given by some authors the other fingers ought not to be bent on the palm of the hand, as doing so shortens the index finger nearly an inch. They ought on the contrary to be left in extension and as far as possible from the index, the thumb directed forwards towards the top of the vulva, on one side of the clitoris, resting on the labium, whilst the three other fingers, directed backwards, should rest on the perineum and anus, raising them if necessary, so as to shorten the vagina and bring the uterus nearer the index finger. We must learn to execute this little manœuvre in spite of the resistance offered by the coccyx and adipose tissue of the perineum; for in certain cases we could not otherwise reach the uterus, its appendages, or peri-uterine tumours situated high up in the pelvis. When the index reaches the posterior commissure of the labia it depresses the fourchette and insinuates itself easily into the vagina. The finger is made to feel its way all along the posterior wall of the vagina towards the cervix, taking note of the condition of the mucous membrane, its temperature, observing whether it is dry or moist, whether its surface is smooth or rough, &c. Having reached the cervix, it first examines the two lips and the os and then carefully examines the fundus of the

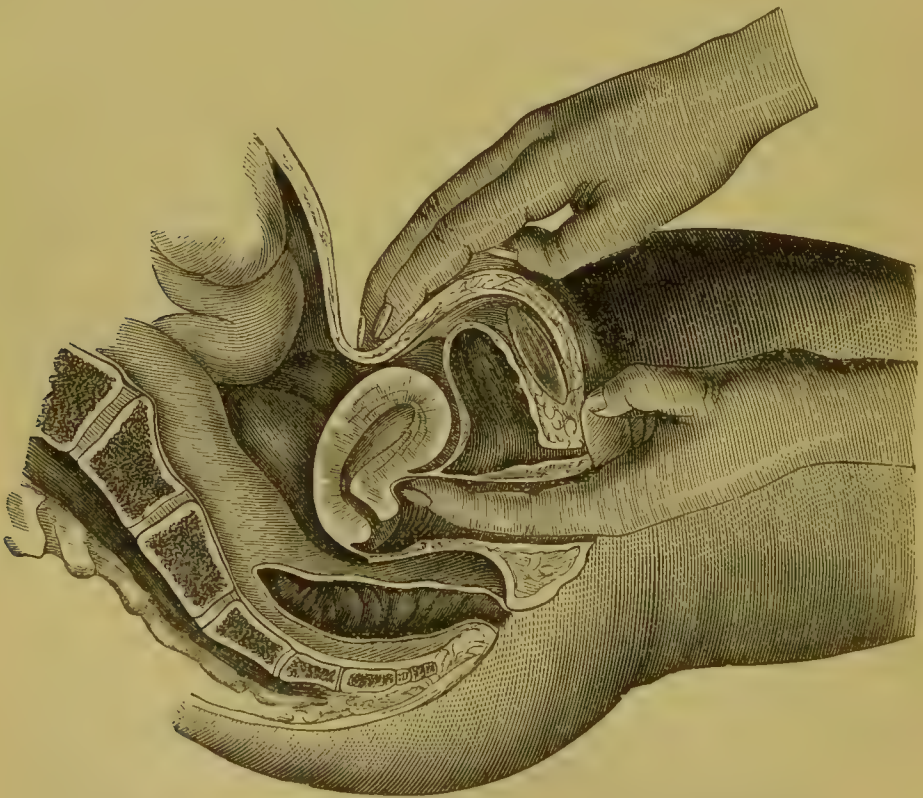


FIG 111.—Vaginal touch associated with abdominal palpation.

vagina. Then it makes its way back to the vulva, now exploring the anterior wall of the vagina in the same way as the posterior was pre-

viously examined. Sometimes, in place of one finger we may have to introduce two or even four when we have to ascertain the presence, form and consistency of a tumour, its connections with the uterus, whether pediculated, &c. The vagina should next be explored whilst the patient lies on her back; only by this means are we able to ascertain certain pathological conditions, the existence and limitation of ovarian or peri-uterine tumours, the distinction between these tumours and the uterus itself when deviated or flexed. Vaginal touch associated with palpation may give to our diagnosis a certainty which could not be acquired by any other means. It is the best of all modes of examination for enabling us to judge as to the integrity of the uterus, the ovaries and the Fallopian tubes. Having asked the patient to flex the lower limbs and open them slightly, the physician, without uncovering her, proceeds to practise the touch with the same precautions as he employed in the vertical position. I think it is better for him to pass the hand under the thigh nearest him; it is more convenient, there is less risk of touching the clitoris, it allows the finger to penetrate further, and above all forces the patient to keep her thighs well flexed, which facilitates the examination. After having acquired experience in this mode of examination, in using the other hand simultaneously for palpation and in depressing the various parts of the hypogastrium, there are very few lesions which can escape our investigation.

In England it is usual for the patient to be placed on the left side when examined. It is also the custom in that country for women to be delivered in this position. The knees are drawn up, the head and shoulders directed obliquely across the couch, whilst the nates are brought near the edge of the bed. In this position the vulva is easily penetrated without uncovering the patient, but it is difficult to practise palpation, or to appreciate uterine displacement and the relative situation of the various organs as exactly as in the dorsal position; the only advantage of the lateral decubitus is that it sometimes reveals to us the mobility of a tumour or the existence of adhesions attaching the uterus and its appendages to the pelvis. Scanzoni and other writers have proposed that in the case of virgins we should content ourselves with the information furnished us by rectal touch, as if this mode of examination were not far more repugnant to the delicacy of girls than the vaginal touch itself. We can persuade a young girl as well as a married woman of the necessity of a vaginal examination, and it is easy to practise this without injuring the hymen—the physical sign of virginity. The precautions to be taken are these: the patient should be requested to bring her thighs close together in place of separating them, as this puts the hymen in a state of tension unfavorable to the entrance of the finger into the vagina. The index finger (well greased) should then be placed on the fourchette, and rest there for a few seconds, till the spasm caused by the contact of a foreign body has passed; then let it glide gently forwards, depressing not only the fourchette, as in the case of a married woman, but also the inferior border of the vulva and the hymen attached to it. Bringing the thighs

together makes this membrane depressible, just as bringing the fingers together makes their commissure depressible. It is only after having ascertained the depression of the hymen that the finger should be slowly insinuated into the vagina, when it will penetrate without pain or difficulty. I have often practised the vaginal touch under these circumstances, and have never caused suffering or hæmorrhage, nor torn the hymen, which is often more or less obliterated in these young girls owing to the leucorrhœa which so often accompanies uterine diseases in virgins. It is not so much the hymen as the sphincter of the vulva which it is difficult to pass, but it can always be managed by going slowly and gently. Finally, whatever may be the age of the patient, the condition of the genital organs, or the position in which we practise the touch, we must endeavour to make the examination as short as possible, remembering that it is always disagreeable and often painful. On this account we must, above all, learn to practise the vaginal touch *methodically*; we must know beforehand all that we ought to seek for and all that we can find by its assistance, observing every indication given to us as we go along. Having already explained how it ought to be practised, I will now point out the valuable information which it gives to the physician as he proceeds from the vulva to the uterus, and from the uterus to the vulva. In the first place this examination may disclose to us, or at least give us reason to suspect, some malformation. I refer the reader to the description given in another place of these abnormalities. Next, the condition of the labia and the orifice of the vagina should be observed, the contraction which this latter and the vagina itself may have undergone after the menopause being sometimes so great as even to make the entrance of the finger difficult. The presence of tumours, cysts of the labia, of the vulva, of Cowper's gland, of the posterior vaginal wall, tumours of the rectum perceptible through this wall, distension of the bowels due to the presence of fæces, which are depressible, and which nevertheless have sometimes been taken for real tumours, may be determined by this mode of examination. In withdrawing the finger we ascertain the state of the mucous membrane and the existence of any cysts, polypi, or vegetations which may be found on the anterior wall of the vagina. Vesical catarrh, cystitis, stone, gravel, may be recognised by the pain caused by pressure of the finger on the anterior wall; inflammation of the urethra, blenorrhagia, vascular or fibro-vascular tumours of the urethra and meatus are brought to light by compressing the inferior part of the anterior vaginal wall against the pubic arch. The finger, before reaching the cervix, may discover in the vagina a tumour originating in the uterus; this is often a polypus, a fibrous tumour, elongation of the vaginal portion of the cervix or of one of the lips, rarely retroversion of the uterus. It is important to discover the connection of this tumour with the cervix and fundus. At other times there may be an encysted tumour in one of the vaginal walls, or a solid tumour in the portion of the broad ligament which runs along the lateral part of the vagina, and which may be an inflammation of the lymphatics. Having reached the cervix we must first note the

mobility or immobility of the uterus, distinguishing the mobility of the cervix due to flabbiness from that of the organ as a whole. When the uterus moves freely on its axis the finger is able not only to displace the cervix, but in so doing to perceive by the resistance offered the inclination of the fundus in the opposite direction. Mobility is an important sign of the integrity of the uterus and surrounding organs; it is destroyed by adhesions following peri-uterine inflammation; it is diminished by diseases of the ovaries and Fallopian tubes, and even by uterine disease, or by the tumefaction, hypertrophy, and chronic inflammation of the organ. Even when the uterus is mobile the finger may find the cervix changed in position, above, below, behind, or in front of the normal position. When the cervix is placed forwards and high up, as if resting on the pubis, there is reason to suspect the existence of a tumour forcing it in that direction. At other times the direction of the cervix is changed. It may be inclined forwards owing to retroversion, but this is rare. More frequently it is directed backwards, the consequence either of an anteversion or of tumefaction of the anterior lip. In order to discover this deviation the finger must follow the posterior wall of the vagina till its tip can pass behind the cervix. In this case the anterior lip is first reached and can be examined. The posterior lip may have become inaccessible, and may only be discovered after much seeking, and with difficulty be forced into the axis of the vagina so as to allow the finger to penetrate into the posterior *cul-de-sac*. At other times, though less often, the cervix is inclined to the right or left, according to the position of the fundus. This position can only be ascertained by a careful examination as to which side the os is directed; unless this is done we should be apt to be deceived by the difference of size between the two lips. The form of the cervix, its temperature, its hardness, softness, irregularity of surface, &c., ought to be carefully investigated by the touch. The neck may be conical in place of being round. This cone may hang freely in the vagina, may even be hypertrophied in a longitudinal direction, occupying the centre of the canal, or may be compressed against one of its walls whilst preserving its mobility like the rest of the uterus. When compressed against one side constantly to the front and to the left the finger discovers on the opposite side, *i. e.* behind and to the right, an enormous vaginal *cul-de-sac*, the size being due to the penis habitually slipping over the conical cervix and lodging there during coitus. This state of things is sometimes made worse by the position of the os being on the side in place of on the summit of the cone, and is a cause of sterility, all the more important to diagnose because it can be remedied by partial amputation of the cervix. This abnormally exaggerated conical cervix must not be confounded with the slightly conical one often found in virgins, and which is quite normal. The cervix may, on the contrary, be flattened like a mushroom, the lips turned back, forming a circular border, which projects beyond the upper part of the neck. There may also be a difference of size between the two lips; the posterior one is generally the longer, the anterior the thicker. The anterior lip often becomes hypertrophied

and engorged; the posterior more painful, owing to granulations or ulceration. I have already described the varieties of form presented by the vaginal portion of the cervix in treating of congenital anomalies. The temperature of the cervix and also of the vagina may be higher than in a normal state. This is an almost certain sign of metritis or of peri-uterine inflammation. The consistency is variable also. Sometimes the cervix is hard as in hypertrophy; when there are follicular cysts or commencement of cancer the surface is irregular. At other times it is soft, being easily indented by the finger. If this softening is accompanied by ascent of the organ and balottement it may be only a sign of pregnancy; but if coincident with increased size, high temperature, disposition to hæmorrhage, &c., it may be a sign of congestion, inflammation, catarrh, or of fungous growths.

The position, form, size, penetrability of the os, are all important elements in the diagnosis. The os may look in various directions, owing either to natural causes or to deviation of the organ, flexion of the cervix, or lastly, to a difference in the size of its lips, *e. g.* one of them may be so much swollen or hypertrophied as partly to cover the other, which has preserved its natural size. The os externum is most frequently a transverse fissure; sometimes it is a more or less circular orifice. In a woman who has had children the fissure is more marked, larger, and somewhat gaping; in the angles of the fissure are hard cicatricial marks, perceptible to the touch. Sometimes, even in virgins, the orifice is large enough to admit the end of the finger. Unless there is pregnancy this indicates an abnormal dilatation due to catarrh, chronic inflammation, congestion, or the presence of a polypus, or other intra-uterine tumour, causing contractions in the body of the uterus, which tend to open the neck. The surface of the lips often present sensible irregularities. Sometimes we find bleeding granulations, sometimes nodules, tubercles, irregularities, point to the development of little tumours. The lips may also be the seat of ulcers and fungous vegetations, or of real tumours, vascular, follicular, or fibrous, more or less pediculated, as well as of cancer. Through the gaping neck the finger may enter the cervical and even the uterine cavity, and discover a clot of blood, a conception, an interstitial tumour, sessile or pediculated, polypi, fungous vegetations, cancers, &c. It is important to ascertain whether, if the touch produces pain, in what way and at what points it is elicited. Sometimes pain is caused by a movement communicated to the uterus, by an attempt, successful or otherwise, to displace it; it then indicates a morbid condition of the appendages, adhesions between the uterus and the peritoneum, the ovaries or Fallopian tubes. Sometimes it is caused by pressure of the finger on the neck or body of the uterus, and is then dependent on increased sensitiveness of this organ; it is felt most when recourse is had to bimanual palpation. This sensitiveness may be confined to one limited point in the organ. It indicates general or partial metritis, or irritation symptomatic of commencing organic lesion. It occurs most frequently in the posterior lip, which seems more disposed to inflammation and ulceration than the anterior one,

which, on the other hand, has a tendency to tumefaction and hypertrophy. At the same time it is easy to recognise whether the size of the organ has increased, not only the size of the neck, but that of the body. Tumefaction sometimes attacks both parts of the womb at once ; at other times only the body is affected, the neck seeming to be normal, but above it can be felt, through the vaginal *cul-de-sac*, a rounded tumour, very similar to the form of the uterus in the beginning of pregnancy. The regularity of outline, the elastic and moderately firm consistency of the tumour, as well as its mobility, should help us to distinguish it from a fibrous tumour, a flexion, an ovarian tumour, a hæmatocele, or from a peri-uterine inflammation. The immobility of the uterus greatly facilitates this differential diagnosis. Whether the uterus be flexed or not, it loses its mobility if it contracts adhesions with neighbouring organs, either in front or behind ; but even though no adhesions are formed, if there be peri-uterine inflammation, inflammatory tumefaction of the uterus or surrounding tissues, there will be a relative immobility owing to the severe pain which any movement produces. If the inflammation has produced an effusion into one of the peritoneal *cul-de-sacs* or in the broad ligaments, the uterus is not only rendered immobile, it is displaced. Sanguineous effusions produce the same results ; retro-uterine hæmatocele, for example, displaces the uterus, forces it forwards and upwards behind the pubis, whilst the tumour projects into the posterior vaginal *cul-de-sac*. In this case the womb is as immovable as if fixed in the centre of a mass of plaster which had hardened around it.

In conclusion, the careful examination of the vagina all round the cervix furnishes us with the most valuable information. In a normal state the *cul-de-sac* is smooth and easily depressed by the finger in either direction, the uterus rising when this is done ; but it may undergo various changes. I have often found it as if glued to the pelvis, as the result of adhesions caused by peri-uterine inflammation ; at other times it is diminished in size by peri-uterine inflammation, a hæmatocele, or by some other tumour situated behind, before, or on one side of the cervix. Sanguineous effusions and peri-uterine inflammatory tumefactions do not always project into the vagina, but they always prevent our being able to depress it indefinitely ; they offer a more or less determined resistance to pressure in lieu of the sensation of empty space due to the displacement of mobile organs. At other times they form a more or less prominent border all round the cervix, or more especially on one side (corresponding to one of the broad ligaments), or in the posterior *cul-de-sac* (corresponding to Douglas's space). The touch may also disclose to us in this *cul-de-sac* behind, and either to right or left of the uterus, the presence of very sensitive globular tumours, due to ovaritis or abscess of the Fallopian tube ; whilst behind, and more especially at the base of the broad ligaments, we may also find inflamed and indurated glands which are very painful. By the touch we also recognise tumours formed by the uterus itself when flexed. We must learn not to confound these various tumours. Peri-uterine tumours can be distinguished from ovaritis by rectal touch, and

flexions from other tumours by the sound; it is also most important to be able to appreciate not only the size of these tumours, but also the sensibility of the peri-uterine tissues. Let us always remember that when the peritoneum, the peri-uterine cellular tissue and the appendages are in a normal state, the examining finger should find the surface everywhere smooth and depressible.

Having completed the thorough investigation just described, we ought to observe whether the finger has brought away any blood or mucus (milky-white, glairy, or purulent), pus, ichor, cancerous matter, &c. Note should be taken of any hæmorrhage which may accompany or follow the examination in the case of bleeding fungosities, cancer, epithelioma, &c.

Rectal touch cannot supply the place of vaginal touch; it is as repugnant to the modesty of women and it gives us less information. It is often necessary but ought only to be employed when requisite to complete a doubtful diagnosis. If we asked our patient's permission, we should expose ourselves to an almost certain refusal; therefore it is better to practise it immediately after the vaginal touch, just as if it were usual and the natural complement of the other examination. Hence it follows that the patient should be in the same position as when examined *per vaginam*, the only precaution necessary being to have advised the patient to take an enema a few hours previous to the examination. After having passed the sphincters, the finger having penetrated about two inches, comes upon a resisting and rounded tumour in front, which is the neck of the uterus pressing more or less on the anterior wall of the rectum in proportion to its size, its position, and its deviation towards the sacrum. Above the protuberance of the cervix the index discovers the body of the womb, and passes over its posterior surface but rarely over the fundus, unless it be inclined towards the concavity of the sacrum owing to a retroversion or retroflexion. On depressing the abdomen with the other hand and forcing the uterus downwards, *i.e.* combining palpation with rectal touch, we can better explore the posterior surface, the fundus, the outlines of the womb and the various tumours which may be found behind or on its sides. This mode of examination helps us not only to recognise flexions, deviations, tumours of the posterior wall of the uterus, such as fibroma, phlegmons, the results of pelvi-peritonitis, inflammatory or cystic tumours of the ovaries and Fallopian tubes, extra-uterine pregnancies, &c., but it also allows us (especially when associated with abdominal palpation) to judge as to the size, the consistency, the mobility, the sensibility of these different tumours, and to obtain a precision in diagnosis which vaginal touch failed to afford. We must take care to raise the perineum as much as possible, for its thickness in stout women makes rectal as well as vaginal touch more difficult. Rectal touch is the only means we have of ascertaining the absence of the uterus. In this case it must be combined not only with palpation and vaginal touch but also with catheterism of the bladder. In short, rectal touch, alone or associated with vaginal touch, is necessary in order that we may judge of

the condition of the recto-vaginal septum, its tumours, abscesses, perforations, fistulæ, &c. Récamier used to insist on the necessity of introducing two fingers of one hand, the index and middle finger, one in the rectum the other in the vagina; or the thumb in the vagina the index in the rectum; or the index of one hand in the vagina and that of the other in the rectum. This is the only way to diagnose small retro-uterine tumours. Touch is not even always sufficient; we must sometimes inspect the mucous membrane of the posterior vaginal wall, forcing it through the vulva by a kind of artificial rectocele, or we may have to examine the anterior wall of the rectum, pressing it down through the anus by fingers introduced into the vagina. This little manœuvre has often been of great use in helping to diagnose lesions of the recto-vaginal septum and in facilitating necessary operations.

Rectal palpation.—I cannot give this any other name to distinguish it from the touch properly so-called, and to express the nature of this far too rough method of examination, which has been too often resorted to, on the authority of Simon, of Heidelberg, who was the first to practise it.¹ It is certainly possible to introduce, not only

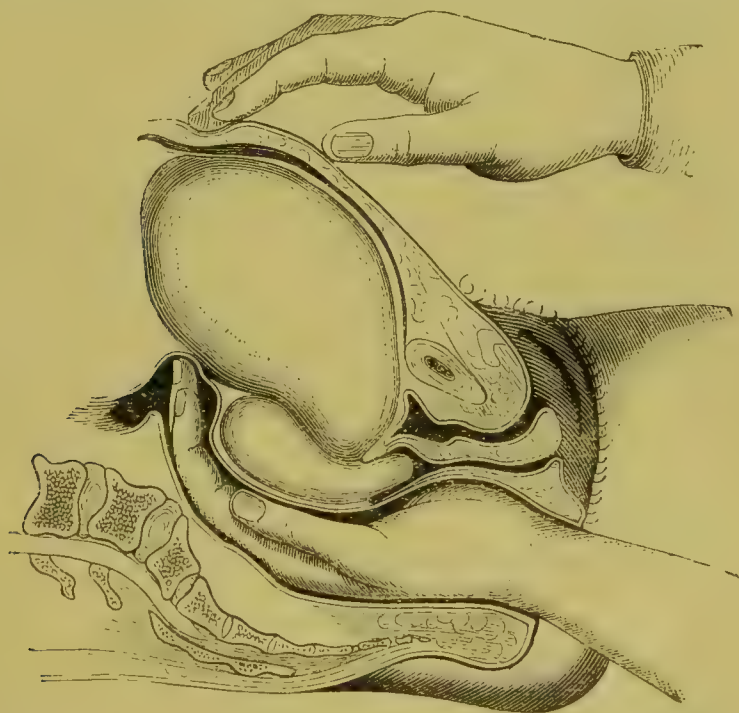


FIG. 112.—Rectal combined with abdominal palpation (after Simon).

one or two fingers, but the whole hand into the rectum especially of women when under the influence of chloroform, after having forcibly but gradually dilated the sphincter. The patient being placed on her back, the lower limbs and the head are flexed on the abdomen, which

¹ *Ueber die Erweiterung des Anus und Rectum, &c.*, Archiv. für Klinische Chirurgie herausgegeben von Langenbeck, Billroth und Gurlt, Band xv, Heft 1, p. 99, 1872; Gazette hebdomadaire, 3 Janvier, 1873.

is thus shortened as much as possible whilst the surgeon introduces first two fingers, then two more, then the thumb, then the whole hand well greased through the anus with the same precautions as are used in introducing it into a narrow vagina or into the uterus for the purpose of turning or for the removal of the placenta, making small incisions when requisite round this orifice. In spite of the great distension of the anal orifice, mere intra-rectal exploration does not relax the sphincter; cases requiring incision are followed by faecal incontinence for ten or twelve days. When the hand has penetrated into the rectum as far as the promontory of the sacrum, it is possible to reach the sigmoid flexure with three or even four fingers, and owing to the mobility of the rectum we can palpate (through its walls) the whole of the abdominal region as far as the kidneys and umbilicus, and so gain much information. In two cases of ovarian cyst Simon was able to determine the breadth and length of the pedicle, the absence of adhesions, and the existence in the fundus of the uterus of two fibromata of the size of a cherry-stone. Unless the patient is very stout, we can in this way examine the ovaries even when they are healthy and in a normal position. It appears from the researches of Simon that the greatest circumference of the rectum is at 6 or 7 centimetres above the anus, and may reach at this point 25 to 30 centimetres. In the upper part of the middle third it is only from 20 to 25 centimetres, and diminishes rapidly beyond that, being only from 16 to 18 centimetres in the middle part of the upper third of the rectum. The narrowest point corresponds to the beginning of the sigmoid flexure. Weir, in summing up these measurements, concludes that a hand measuring less than 26 centimetres in circumference can without danger penetrate from 17 to 19 centimetres but not farther. It is superfluous to remark that in this exploration, which is only allowable in very serious cases, a small hand is very useful, and that the greatest gentleness should be observed in the manœuvre, especially if there is reason to suspect contraction of the intestine. Several deaths have already occurred as the result of this method. Heslop, of Birmingham ('Lancet,' May 11th, 1872), relates two cases of death due to rupture of the intestine near or at the seat of a contraction. Three other cases of death are reported by Robert Weir ('Medical Record,' New York, May 20th, 1875, p. 201) occurring in the practice of Sands, Sabine and Weir, all three due to laceration of the intestine.

When an operation necessitates penetration far into the rectum we may have recourse to rapid dilatation of the anus and intestine; often rupture of the sphincter is sufficient; if not we can resort to lateral incisions, or, better still, to a posterior one, with or without ablation of the coccyx. The introduction of instruments is greatly facilitated by posterior linear rectotomy as practised by Verneuil, without hæmorrhage, by means of the thermo-cautery, and in this way operations are made possible which would not otherwise be practicable; but these operations are rarely required for diagnostic purposes. Lastly, when ocular inspection is associated with touch, various kinds of specula

(the two best being the univalvular and Fergusson's) may be introduced, and furnish us with new and valuable elements of diagnosis, not only for rectal diseases but for those of the uterus and its appendages.

Vesical touch.—I must not omit noticing this new mode of examination, recommended by Noeggerath,¹ which may be exceptionally used; it is the association of vesical with rectal or vaginal touch. The urethra being dilated the index finger is introduced whilst another finger is in the rectum or vagina, the uterus in the meantime being drawn down by a fine tenaculum hook.

3. *The Speculum.*—The speculum is a mirror reflecting light on the neck of the uterus and the distant parts of the vagina, whilst the vulva and rest of the vaginal walls are dilated by it.² The one for habitual use should be one easily handled and, above all, easily cleaned. In these respects there is none superior to the cylindrical speculum, slightly conical, of Récamier (1814), or of Dupuytren (1816); but this speculum is by no means sufficient for every case; indeed, as applicable to the largest number of cases, the duck bill is preferable. In enumerating the various instruments of this kind which are manufactured I will mention those which I use most frequently, as well as those to which I have recourse only in exceptional cases. The tubular metal speculum is, as I have said, most necessary to the gynecologist. He should have several sizes and all as long as possible. More than once I have failed to reach the cervix owing to the shortness of my speculum. It is well to have five sizes on account of the variable dimensions of the vulva and cervix in different women. It is not enough that a speculum enters the vulva; it must also fit the neck of the womb. If the large size is most convenient for examination it is not so for the application of leeches to the cervix, because if this organ is not exactly encircled by the speculum the leeches may fasten on the vagina in place of on the cervix.

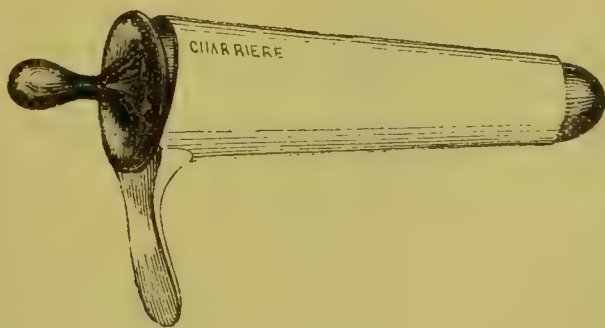


FIG. 113.—Cylindrical speculum fitted with a plug.

The gynecologist should also have several sizes of Fergusson's glass tubular instrument, silvered and coated with vulcanite; it is more easily introduced into a narrow vagina, and is also more convenient for

¹ *American Obstetrical Journal*, May, 1875.

² Verhues, *Monographie sur le dioptré ou spéculum*. Thèse de Paris, 1848.

reaching a retroverted cervix. Unfortunately it is very fragile. The manufacturer ought to try to make it stronger by adding to the thickness of the glass.¹

Charrière's trivalvular speculum owes its great success to want of

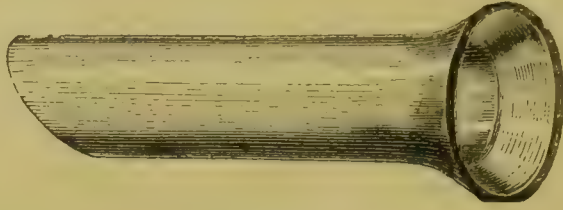


FIG. 114.—Fergusson's speculum.

skill in the ordinary practitioner. However, the smallest size may be useful in examining a virgin. This instrument has another advantage;



FIG. 115.—Charrière's trivalvular speculum, fitted with a plug.

by removing one of the valves it can be turned into a duck-bill, which allows the vaginal wall to be examined. These valvular expanding specula have, moreover, a further advantage, owing to their conical shape when shut they can be easily introduced into a narrow contracted vulva or where there are fissures, while they dilate the vagina when open. They were invented by Jobert (1833) and Ricord (1834), and have undergone various modifications, one of the most important (due to Ricord) being that of having the hinge on a level with the vulval orifice, so that when the blades diverge the circumference of the instrument is not increased at this point—an arrangement which prevents laceration of the vulval orifice. This bivalve speculum is useful in examining a large cervix, but it does not sufficiently protect the vagina when applications have to be made to the cervix, and it also has the inconvenience of allowing folds of a large vagina to get between the valves.

¹ As for the opaque glass speculum of Mayer, of Berlin, it neither possesses the advantages of Fergusson's nor of the simple boxwood instrument. It is certainly necessary to have a speculum which can protect the vagina from heat when the actual cautery is used, and which is not affected by acids and caustics; but I greatly prefer the simple boxwood speculum on account of its cheapness and strength, or those of Leiter, of Vienna, in vulcanite, which are both strong and light.

Charrière has made a new bivalve speculum for Cusco and Veiss, of Paris, and for Tyler Smith, of London ; whilst preserving a constant

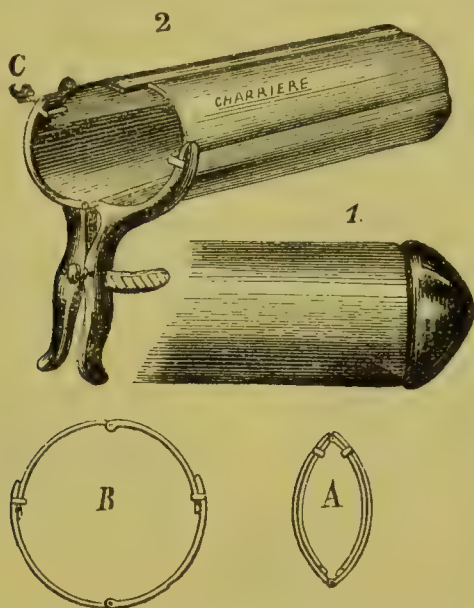


FIG. 116.—Ségalas's quadrivalve speculum. 1, A, shut with its plug ; 2, B, open.

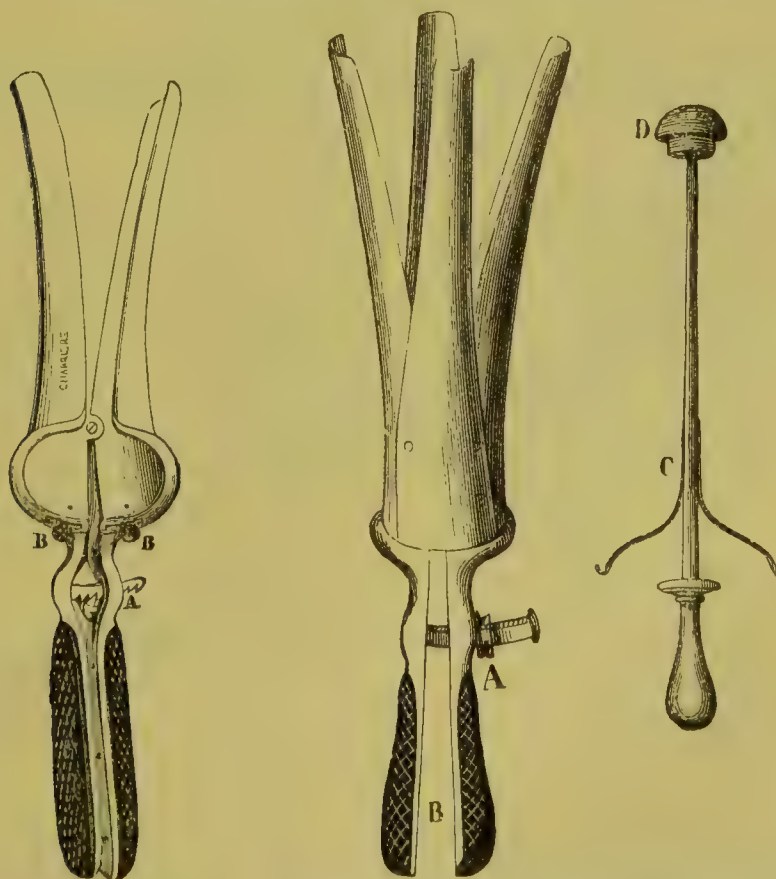


FIG. 117.—Ricord's bivalve speculum.

FIG. 118.—Charrière's quadrivalve speculum.
c, D, its plug.

diameter at its vulval extremity, it allows the practitioner to separate the two blades widely at their uterine extremity, so as to expose the cervix to view without allowing the mucous membrane of the vagina to be caught between the valves. Tyler Smith's is of the usual size. Cusco's is shorter, so as to avoid pushing the cervix back when it is

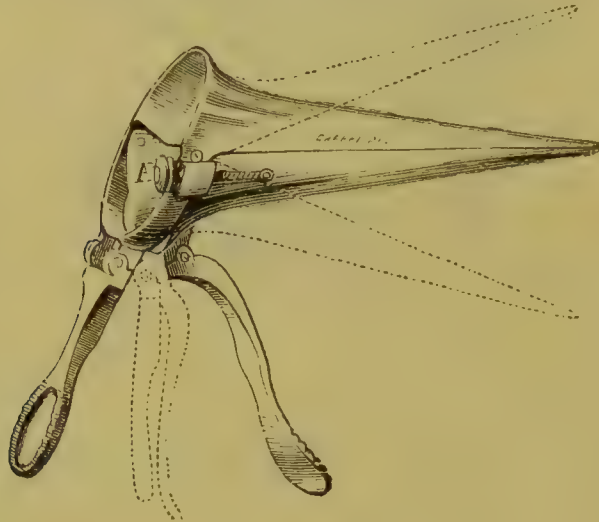


FIG. 119.—Cusco's bivalve speculum.

low down, and to allow of its being examined nearer. Its only inconvenience is that it sometimes dilates the lips of the cervix, so as to cause ectropion, which may lead the practitioner into error as to the position of the os externum.

The univalvular speculum is indispensable for the examination and treatment of diseases of the vagina, and especially for vesico-vaginal fistula for which it was invented. Lallemand used a simple speculum of this kind for such cases. For a long time I have used similar instruments that I made myself of zinc or that I had made in wood, when I have had occasion to perform operations in the remote parts of the vagina. Hergott, of Strasburg,¹ was accustomed to use a cylindrical metal speculum, a great part of which he removed so as to leave only a spoon fastened to a handle, having the desired size and



FIG. 120.—One of Jobert's lateral blades.

curve. Jobert² used long ago a very ingenious contrivance for dilat-

¹ *Perfectionnements récents apportés à l'opération de la fistule vésico-vaginale*. Strasbourg, 1863.

² *Traité de chirurgie plastique*. Paris, 1849.

ing the vagina in the treatment of fistula; he had four blades of different shapes, one of which he applied to the anterior wall, another to the posterior, and the two remaining ones laterally. I have several times found them of great use. But all these instruments are inferior

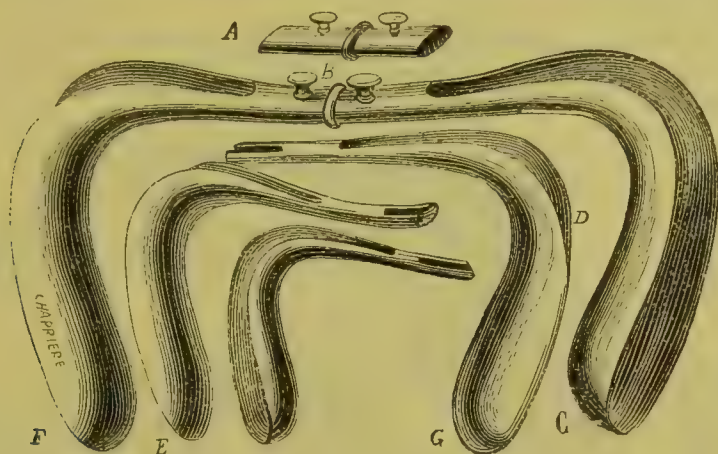


FIG. 121.—Duck-bill specula, for the operation for vesico-vaginal fistula by the American method.

to the duck-bill specula invented by the Americans to be used in operating for vesico-vaginal fistula. In Marion Sims's instrument¹ the same handle carries two blades of different sizes. Bozeman² has exaggerated the breadth and curvature of these blades; there may, however, be cases where the large dimensions of his instrument may be useful. Neugebauer was in the habit of simply using two long



FIG. 122.—Neugebauer's speculum modified by Barnes.

metal blades regularly curved, one being inserted along the anterior, the other along the posterior wall, so that the two formed a bivalve speculum; the uterine extremities of the blades may be more or less

¹ *Silver Sutures in Surgery. The Anniversary Discourse before the New York Academy of Medicine.* New York, 1858.

² Follin, *Examen de quelques nouveaux procédés opératoires pour la guérison des fistules vésico-vaginales*, *Revue critique* (*Arch. gén. de méd.*, 5^e série, t. xv, pp. 457, 584). Paris, 1860.

separated, while the vulval extremities serve as handles. Barnes has made various alterations in the curve and size of the valves; in giving to each of the four extremities a different curve we have specula with different valves, and by associating two together we have four additional specula.

What I find most convenient is to have four of Sims's valves of different sizes, and two handles; as each of these valves fits on to one

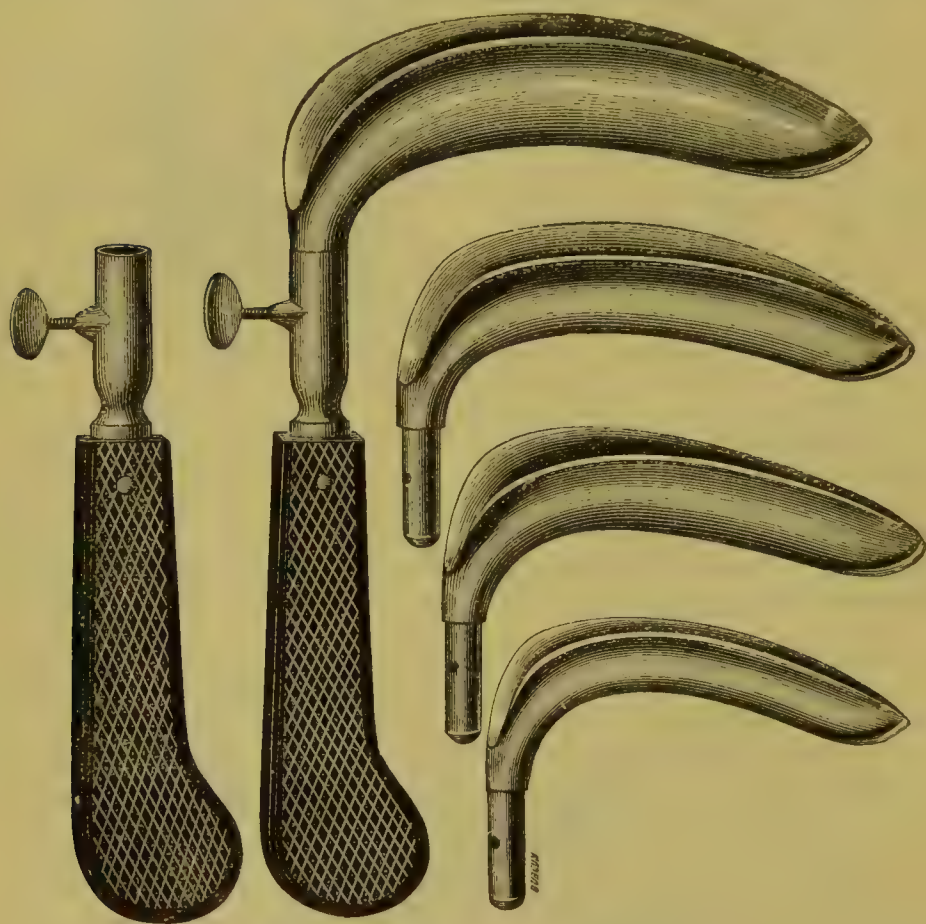


FIG. 123.—Speculum made for my own use with four valves and two handles.

of the handles, we can when necessary use two valves at the same time, one to draw down the posterior vaginal wall, the other to raise the anterior wall. I have had such a speculum made for myself and use it every day: the smallest blade is a very narrow one for virgins, the largest a very broad one useful for operations; by making use of two handles and two blades simultaneously my univalvular speculum is transformed into a bivalve of variable dimensions. I have similar valves made in wood, others in vulcanite, useful when acid applications are made, or when the actual cautery is employed. In fact this instrument can when necessary replace all other specula, whilst none can replace it. Therefore it is the most fitted for daily use when we do not wish to be cumbered by too many instruments.

It is very easily introduced ; all that is required is to push the well-oiled blade along the side of the index finger of the other hand, the tip of which touches the cervix. The position of the uterus depends on whether the decubitus of the patient be dorsal, ventral, or lateral,

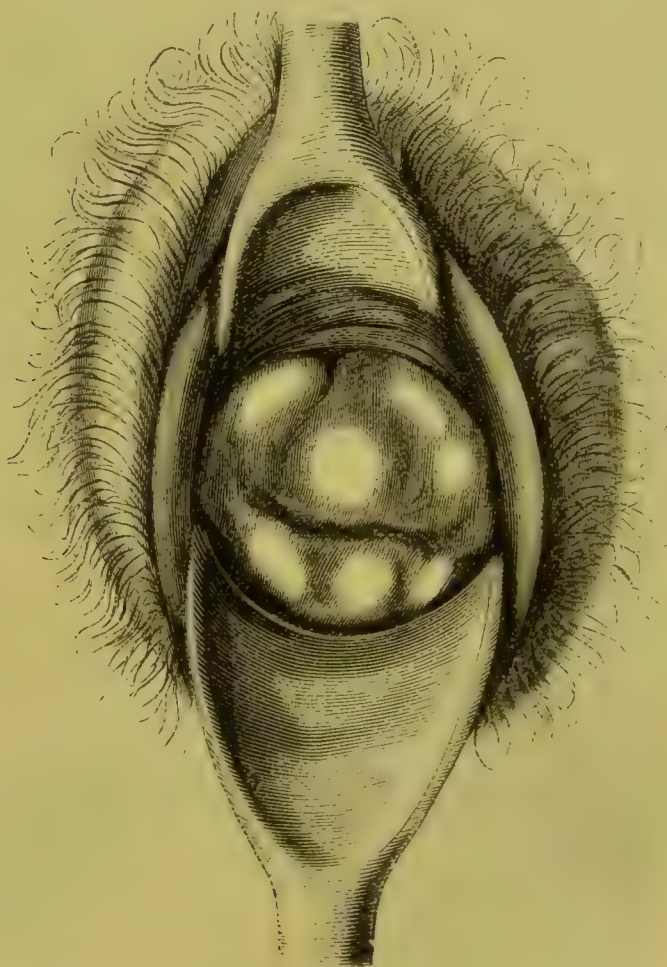


FIG. 124.—Two univalve specula used as a bivalve.

the position chosen being important not only for diagnosis (which is greatly facilitated by the examination of the two *cul-de-sacs*, impossible with any other speculum) but also for treatment. If the patient is in the pelvi-dorsal position we find the cervix opposite and quite near us ; if she is on the left side, she is in a less strained position, and the cervix is very mobile, a condition favorable to the exploration of the vagina and to the performance of operations on it ; if she is in the ventral position, the uterus is far off, dragged down by the weight of the viscera, which are propelled towards the umbilicus by the entrance of air into the vagina when the speculum is introduced ; but though the cervix is far off, its position is at the same time very convenient when applications have to be made. I should like to take this opportunity of warning young practitioners against making use of any mechanical contrivances for fixing the speculum either to the pelvis of the patient

or to the operating table; the patient is thereby exposed to serious injury when she instinctively but involuntarily shrinks back from the operating instrument. Surely the hand of an assistant is preferable in every respect.

The introduction of the cylindrical and bivalve speculum is less easy than that of the simple univalve; the difficulties are, to avoid giving pain when the instrument passes the vulval sphincter, and to find the cervix. Pain will be avoided if care is taken to depress the fourchette before passing the speculum, which should be well oiled. An inexperienced practitioner, when using a cylindrical or valvular instrument, will find it advantageous to make use of a wooden plug with rounded extremity projecting beyond the speculum, which will glide gently between the labia into the vagina, and can be removed as soon as the instrument is in place. The bivalve must be introduced transversely and not perpendicularly, for the anterior and posterior vaginal walls touch, as shown in Fig. 46, p. 50. It is not sufficient to be acquainted with the normal direction of the vagina and position of the cervix; before applying the speculum we must always ascertain the exact

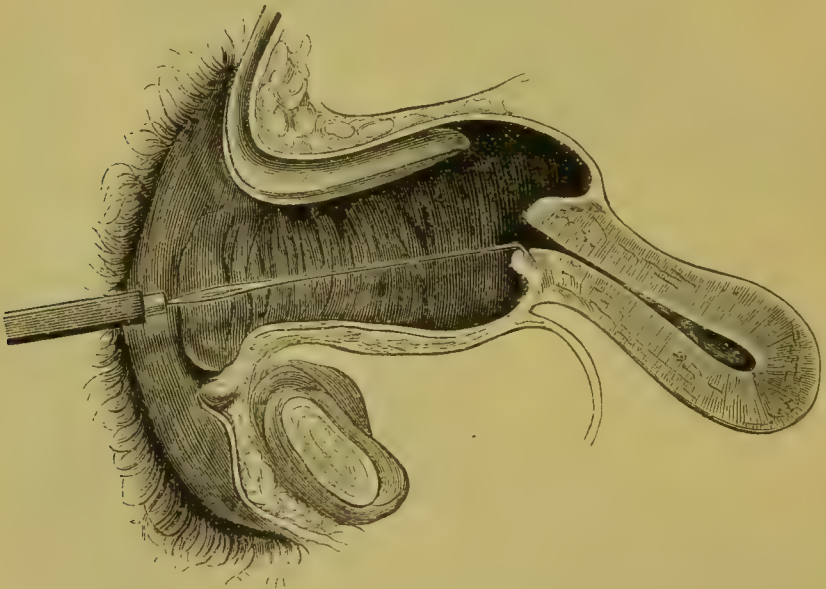


FIG. 125.—Ventral position. Posterior vaginal wall raised by univalve speculum.

situation in each case by vaginal touch. The speculum as well as the touch can be used in the case of virgins without injury to the hymen, care being taken that the legs are completely flexed on the abdomen and kept close together, so as to relax the hymen and make it depressible. Of course only instruments of the smallest size must be used.

The speculum should be oiled and slightly warmed before its introduction, otherwise the sudden contact of the cold metal with the sensitive genital organs might cause contraction of the vulva and spasm

of the vagina, sometimes even sharp pain. The patient being in an upright position by the edge of a bed, sofa, or table, we ask her to lie back, when we raise the feet, flexing the legs gently on the abdomen, begging her (if no assistant is present) to keep them in this position by passing her hands under the knees. The ischiatic tuberosities ought to project as much as possible over the edge of the couch on which the patient is lying. I have learned by experience that women prefer this position (in which it is not necessary to uncover the patient), as being more modest than the one generally used in France, in which the patient has to open her knees and place her feet on two chairs before her, at a considerable distance from each other; besides, the patient being occupied in holding her knees, has her attention somewhat distracted from the examination. It is, moreover, the only suitable position for applying a speculum to a virgin; the legs being close together the hymen and fourchette are relaxed and so laceration is prevented. Let me advise all my readers to follow my example in preferring a simple couch, ottoman or table, to all those ingenious mechanical arm-chairs, which only frighten patients.

The physician, separating the labia and nymphæ with two fingers of his left hand, examines the colour of these organs, the state of the hymen and carunculæ and of the meatus, ascertaining whether there is any pus or leucorrhœal discharge. He depresses the fourchette with the index finger of the right hand, to judge as to the rigidity of the tissues. Then taking the speculum between the thumb and three first fingers of the same hand, he places the narrow end flat on the fourchette, lowering the hand so that the uterine extremity of the instrument looks upwards. He then depresses the fourchette, vulval sphincter, or hymen (if there is one), gradually bringing the axis of the speculum into the axis of the vulva, and by a see-saw motion, executed slowly and carefully, he inclines it more and more towards the sacrum, as in practising the touch. He must beware of letting the upper border of the speculum come against the meatus, as this might cause pain and bleeding. The vulva once passed, he slides the instrument towards the cervix, following the direction pointed out by the previous examination. This organ is usually situated behind, the os looking towards the concavity of the sacrum; the easiest way of reaching it, therefore, is to follow the posterior vaginal wall.

Daylight is always preferable to any other; I have, however, often been able to examine and even operate by artificial light. Collin's reflecting lamp is the best; but a good moderator or even a candle is sufficient, if an assistant with his hand, or, better still, with a silver spoon, reflects the light into the speculum. As the speculum slowly penetrates the vagina the surface of the latter ought to be carefully inspected. We may find not only redness, granulations or erosions, but ulcers, vegetations or polypi, as well as mucus, blood, pus, &c., excreted by the uterus. If the cervix when reached is not in the axis of the speculum, it must be brought into view with the tenaculum hook or sound, and wiped with a pledget of cotton wool. If the mucus is too adherent to be got rid of by this method it should be re-

moved by injecting tepid water, and if this is insufficient we must use an emulsion of yolk of egg, as Pajot¹ advises. We shall then be able to determine the position, size, colour and external appearance of the cervix. In short, the speculum confirms some of the information

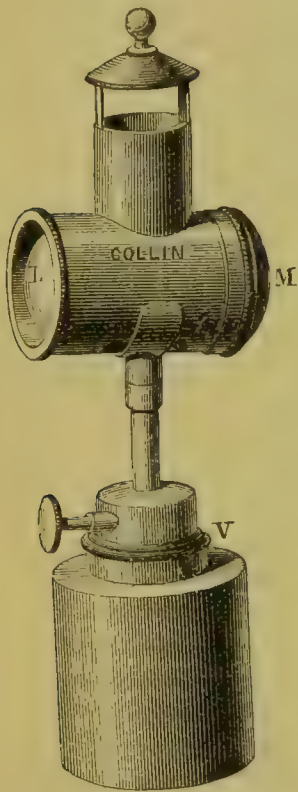


FIG. 126.—Collin's lamp, with reflector and refracting lens.

already furnished by touch, whilst it adds some new facts. If the os is directed backwards (anteversion) the speculum only discloses the anterior lip; and in such a case, to bring the os into the axis of the speculum we must not only have the patient's legs well flexed on the abdomen, but we must ask her or an assistant to depress the abdomen whilst we use the sound. In this way the fundus is lowered whilst the cervix is raised. If the os looks forwards (retroversion) we must direct the speculum behind the pubis, and with the sound try to draw the uterine orifice backwards. I have sometimes found it useful to place the patient on elbows and knees or on her side, in order to cauterise the cervix, which I could not otherwise have reached. We can judge as to the volume of the cervix by the difficulty of including it in a cylindrical speculum, or by being obliged to have recourse to a bivalve. The inequalities, the consistency, the relative size of the two lips are visible, or can easily be ascertained by exercising pressure on the organ as a whole or on each of its lips.

The principal facts revealed by the speculum are: the nature, abundance, and origin of morbid secretions, the form of the orifice, the colour of the cervix, its ulceration or enlargement, whether due to hypertrophy or the existence of vegetations. If the cervix is dry it is well to squeeze it with the speculum, pressing the uterus at the same time through the abdominal walls, to see if by this means we can express a drop or even a flow of clear, milky, or purulent mucus. It is important to ascertain the form of the orifice; it may be a round hole or a transverse fissure, all but closed or widely open; it may be continued by secondary fissures, sometimes bordered by cicatricial tissue in multiparæ; or there may be ectropion of both lips, exposing to view the cervical cavity; there may even be inversion, or, if one may so say, eversion of the mucous membrane of the cervix. The colour is important; it may be pale pink, dark red, or even violet. The violet colour of the vulva, vagina and cervix is not exclusively a sign of pregnancy. It exists to some extent for a few days before and after men-

¹ *Annales de Gynécologie*, t. v, p. 464. Paris, 1877.

struation. This change of colour is so marked and is coincident with such equally important changes in the size, weight and consistency of the organs, that I make it a rule not to examine a woman for the first time before the eighth day after menstruation, *i. e.* if I wish to make an exact diagnosis of the condition of the uterus. Eruptions, erosions, ulcers of various kinds, are best seen at this time, and cannot be diagnosed with precision by any other means. The same may be said with regard to slight granulations and those that are confluent, as well as fungous growths and small follicular cysts.

What has been said in respect of other modes of examination is especially true of the speculum; it is not only a means of diagnosis but of treatment. It alone allows of various applications being made to the cervix or to the uterine cavity. But we must bear in mind that this instrument ought not to be unnecessarily used, as it may irritate the urethra, vagina and cervix, and like all applications it fatigues the organ when used too often.

4. *The Uterine Sound.*—The sound is our chief resource in making an examination of the uterine cavity. In the last century Levret¹ used one made of whalebone for measuring the womb. In 1828, Lair² introduced Larrey's probe into the cervical cavity curving the extremity like a catheter, and in order to facilitate its entrance into the body of the womb he withdrew the speculum one third and depressed the handle of the probe as much as possible. It is, however, only recently that the sound has come into general use as a means of diagnosis and treatment, thanks to Simpson, Huguier, Valleix and Kiwisch. The circumstances under which this instrument was invented indicate its chief uses. Valleix, engrossed with uterine displacements, wanted like Kiwisch and Simpson to find an intra-uterine sound that would straighten the flexed uterus; whilst Huguier, having discovered hypertrophic elongation of the cervix, invented the same instrument (calling it a hystrometer) to enable him to measure the cavity. To these uses we may add that of determining deviations in the cervico-uterine canal, and above all, the increased capacity of the uterine cavity associated with interstitial fibroma, polypi, &c. When the os is very small, and situated in a cervix which is conical and deviated from its normal position, the only means of ensuring the entrance of the sound is to



FIG. 127.—Intra-uterine sound with stem sliding into the handle and movable index.

¹ *Sur un allongement considérable qui survient quelquefois au col de la matrice; Journal de médecine et de pharmacie de Roux*, Octobre, 1773, t. xl, p. 352. Quoted by Stoltz, *Gazette hebdomadaire*, 1860.

² *Nouvelle méthode de traitement des ulcérations de la matrice.* Paris, 1828.

introduce it through the speculum. But after an entrance is secured it penetrates more easily without the speculum than with it. The reason of this is, that the axis of the uterus is not that of the vagina; that there is also often a slight ante flexion between the neck and body of the womb; besides, there may be abnormal flexions or tumours causing curves and angles in the uterine cavity. The uterine extremity must follow these various curves, consequently the handle must be inclined in a contrary direction. Therefore, after the sound has entered the os the speculum ought to be withdrawn and the handle of the sound depressed towards the rectum, so as to allow the bulb to enter the body of the uterus. When it is desirable to introduce the sound without the speculum, the patient ought to be on her back or on the left side. After examining by touch, the tip of the finger is placed close to the os, and the sound is introduced by the other hand (its concave side being always directed forwards); guided by the index finger the os is easily reached and entered. The finger ought then to be placed behind the cervix, raising it slightly, whilst the sound is pushed gently forwards 25 or 30 millimetres. The operation so far is very easily performed, unless the orifice is circular and very narrow, as is often the case in virgins and nulliparæ; usually no pain is felt, unless the patient is suffering from metritis or neuralgia. If difficulty is experienced in passing the *arbor vitæ*, it will be overcome by moving the sound very gently from side to side; but it often is not easy to pass the os internum without causing a little bleeding. The narrowness of the orifice, its natural occlusion owing to the median columns of the cervix fitting tightly into each other, the spasmodic contraction of the sphincter, the flexion of the body on the neck, all conduce to make it difficult to pass the os internum. Indeed, sometimes it is impossible to do so; occasionally, however, it is passed very easily and without causing any pain. Force must never be employed in order to enter the uterine cavity, by pressing very gently in the probable direction of the orifice, raising the neck or body with the finger, according to the mutual relationship of these two parts as indicated by vaginal touch, depressing the handle for an ante flexion, raising it for a retro flexion, or inclining it to the side in the case of a lateral flexion, we at last experience the sensation of resistance overcome, whilst the patient at the same moment experiences more or less acute pain. The instrument penetrates to a distance of 60 to 80 millimetres, and can be moved easily, especially in a lateral direction. When it impinges against the fundus it sometimes causes a peculiar sensation of discomfort and suffering, which "goes to the heart," as patients say. I have seen some women suffer very acute pain, accompanied by hysterical spasms and nervousness, which lasted for some hours. As the sound follows the direction of the canal the uterus is replaced in proportion as the instrument penetrates, so that flexions disappear, being sometimes transformed into versions, whilst at other times the whole organ is brought back to its normal position. It is then that the mobility of the sound in the uterine cavity can be observed, and that it can be made to describe circles more or less extensive; and, at the same time, before its withdrawal care

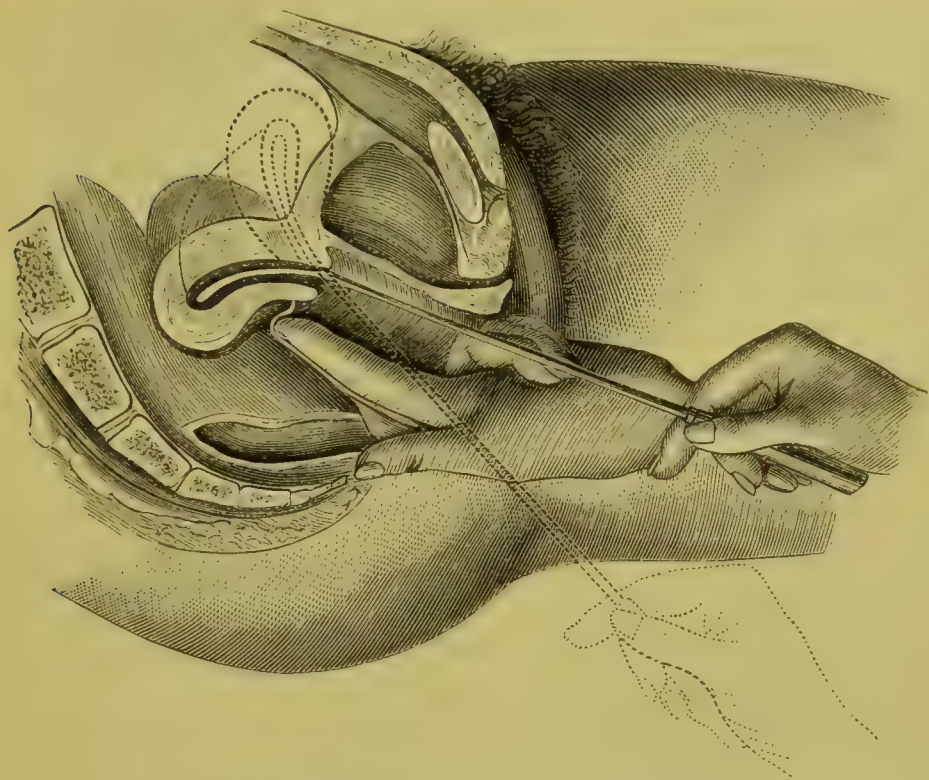


FIG. 128.—Use of the sound in retroflexion.

should be taken to move the index slide to a level with the cervix in order to measure the exact length of the organ.

In the case of a uterine fibroma, anteversion, &c., the introduction of a sound is very difficult and painful. In place of the ordinary instrument it is better to use Sims's small flexible silver or copper one. If we cannot reach the fundus with this instrument we must use a very small gutta-percha bougie, because in such a case it is of great consequence to measure the exact length of the uterus.

We must not persist in forcing the sound onwards when we experience great resistance; it is better to make a second or third attempt, or to delay it till another day. As a rule it is more prudent to use this instrument in the middle of the intermenstrual period, when the congestion which precedes and follows menstruation is not present; however, if we cannot succeed then, we may take advantage of the menstrual period or the day following (when the orifices are dilated) to penetrate into the cavity and to dilate the os internum; but in doing so we must use extra precaution.

The use of the sound may be contra-indicated; for instance, by pregnancy. To avoid all risks the

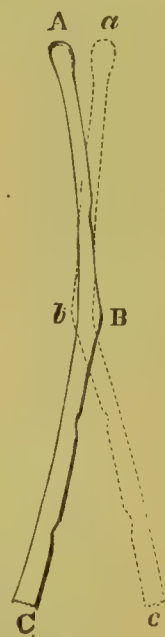


FIG. 129.—A *a*, arc of a circle described in the uterine cavity by the bulb of a sound moving round a fixed point B *b*, at the os externum.

practitioner should never use the sound without receiving an assurance that the patient has had no coitus since her last monthly period, and having satisfied himself that the usual presumptive signs of pregnancy are absent. The use of this instrument is also contra-indicated at the menstrual period, especially when menstruation is abundant and painful and associated with considerable congestion, as well as in an inflammatory condition of the uterus, in suppuration of the mucous membrane, in acute catarrh, in ovaritis, in acute pelvic peritonitis, in an organic disorder such as cancer or softening of the tissues of the body of the uterus, or in the few weeks following delivery. Care must also be taken not to use force in pressing the bulb of the sound against the uterine walls for fear of lacerating or perforating them. Such accidents have occurred, and although they have seldom been followed by serious consequences we must remember there is a great difference among women as to sensitiveness. Several cases of death¹ have been recorded as the result of the imprudent use of this instrument. Unless the uterus is perfectly mobile it ought never to be lifted up by the sound, nor should abdominal palpation be combined with the use of this instrument, for in pushing it against the fingers which depress the hypogastrium we run the risk of perforating the uterus.

Whilst admitting that the sound requires to be used with great care, I think all gynæcologists will agree with me in considering it indispensable in the diagnosis of a certain number of uterine diseases. If we remember that normally the uterus is slightly anteflexed, that the relative lengths of neck and body are anatomically determined, that in a state of health, especially in the nullipara, a cavity of the body cannot be said to exist, the two walls, being in close juxtaposition, only allowing slight lateral movements to any instrument that may be introduced, and, lastly, that the smooth mucous membrane protected by epithelium is not liable to be torn by a blunt instrument nor to bleed unless there is congestion, we may conclude that examination by the sound will be of great use in giving us necessary information on the following points:—1. The dimensions and entire length of the uterus, and consequently its volume. 2. The relative dimensions of the cavity of the body and neck, the latter being sometimes short, whilst the former is long and inflamed; at other times the neck only is long, being more than three quarters of the whole length, presenting thus a true hypertrophic elongation. 3. The differences of size in other directions, the dilatation of the uterine cavity being easily perceived by gently moving the sound. 4. Irregularities of the surface, alterations in the form of the cavity, fibromata, polypi, vegetations, fungous growths, and the hæmorrhage which accompanies them. 5. The absolute and relative position of the uterus and of its two segments with regard to each other, deviations, flexions, and the differential diagnosis between these displacements and polypi, fibromata, whether interstitial or pediculated, utero-peritoneal adhesions, extra-uterine tumours, peri-uterine abscess, hæmatoceles, ovarian cysts, &c. 6. Stenosis, deviations, and spasmodic contractions of the uterine orifices.

¹ L. E. Dupuy, *Progrès médical*, pp. 109, 171, 195. Paris, 1873.

7. Lastly, the accumulation of fluids in the uterine cavity, which can be diagnosed by means of the hollow sound, which at the same time affords a means of ascertaining the comparative dilatation of this cavity.

II. *Complementary means of exploring the Uterine Cavity.*—The greater part of these are means of treatment as well as of diagnosis. I will, however, describe them here, because though

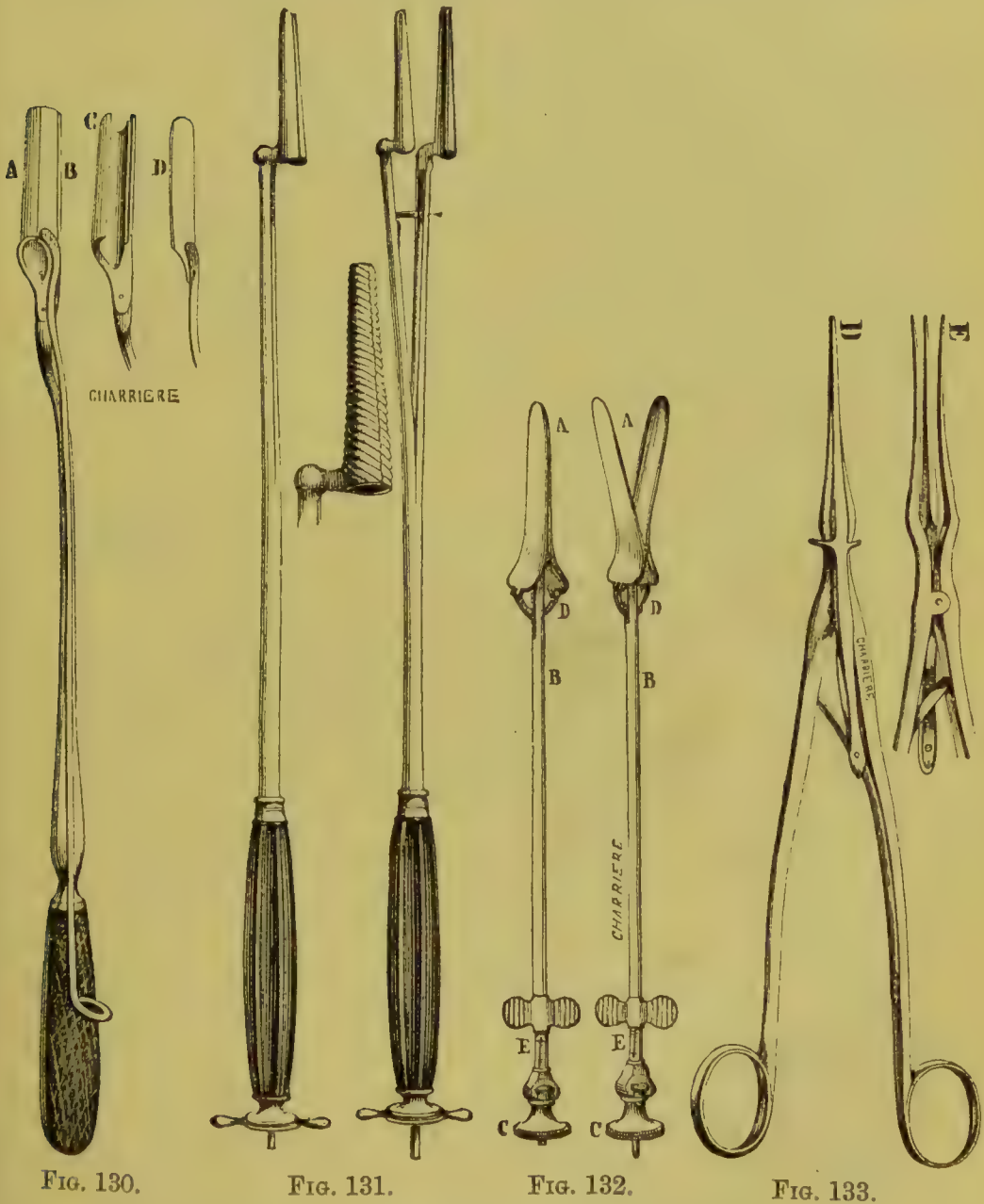


FIG. 130.

FIG. 131.

FIG. 132.

FIG. 133.

FIG. 130.—Jobert de Lamballe's intra-uterine speculum.

FIG. 131.—Mathieu's small speculum or uterine dilator.

FIG. 132.—Bivalve uterine dilator (Lemenant-Deschenais).

FIG. 133.—Trivalve uterine dilator (Busch, modified by Huguier).

there is only one way of using them when they are employed as a means of diagnosis, their use varies, on the contrary, according to the exigencies of the case when they are employed as a means of treatment.

The *intra-uterine speculum* is, I think, the least useful of all instruments. There are various kinds, one of them (that of Desormeaux) being really a speculum, *i. e.* a mirror enabling us to see different parts of the intra-uterine mucous membrane; the others serve also as dilators. I may mention those of Atthill,¹ Jobert, Mathieu and Blatin, the bivalve of Lemenant-Deschenais, the trivalve of Busch modified by Huguier, &c. Peaslee² has also invented a somewhat similar instrument. It is a silver tube, 7 to 8 millimetres in breadth, 5 to 6 centimetres in length, with a conical end, through which are three openings, which not only afford a view of the fundus, but also allow of the introduction of the very finest instruments, of vegetable or metallic threads, &c.

The *dilator* is more useful. I may mention Aussandon's instrument, made of prepared wood or ivory, which, when placed in the uterus, swells to double its size. Dilatation, however, is effected



FIG. 134.—Aussandon's uterine dilator.

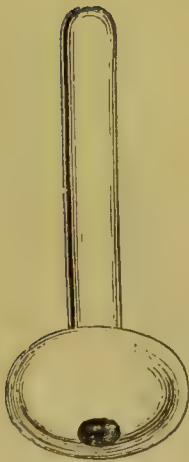


FIG. 135.—Simpson's large intra-uterine pessary.

more surely and safely by means of ordinary bougies or by Simpson's metallic stems (of tin, silver, or aluminium) of gradually increasing size, terminating in a bulb, which supports the cervix. But the best of all means of dilatation are tents of prepared sponge or laminaria, which expand so slowly and gradually that the dilatation of the uterine cavity and orifices is attended by no danger, and very often by no suffering.

1. *Sponge tents* should be prepared in the following way:—Take a piece of sponge of conical shape, soak it in a strong solution of gum, fix it on a central stem, and compress it as forcibly as possible by binding it round with string; dry it thoroughly, remove the string, file off any roughnesses, and cover it with lard or wax to facilitate its introduction, which is effected by means of a stem inserted in the centre of the sponge, or simply

¹ *Dublin Journal of Medical Sciences*, January, 1873, p. 73.

² *Intra-uterine Medication: its Uses, Limitations and Methods*, by M. D. Peaslee. *New York Medical Journal*, July, 1870, p. 481.

by the uterine forceps. These tents should be made of different sizes, varying in diameter from 2 to 10 millimetres and in length

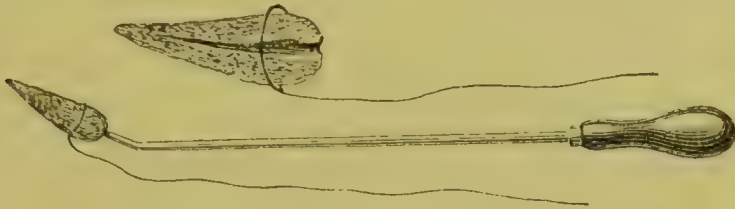


FIG. 136.—Sponge tent with introducer.

from 2 to 7 centimetres. Before introducing one I cover it with belladonna ointment (Ext. Bellad. gr. xv, lard gr. lx). After its insertion I pour two spoonfuls of glycerine into the vagina, and then place a plug of cotton wool to keep the tent in its place. The glycerine, whilst determining a very abundant serous secretion, disinfects this leucorrhœal discharge entirely. The tent is left for twenty-four hours, when the patient can remove it herself by means of a thread attached to it, and which is long enough to hang outside the vulva. The dilatation generally takes place without suffering; sometimes, however, the patient has pains like those of menstruation. If the sponge is left for more than twenty-four hours, it is generally expelled spontaneously into the vagina, probably from pressure of the mucus secreted above, aided by uterine contractions. However, if it is pushed high up into the cervical cavity, so that the os externum closes over it, extraction may be necessary, especially if the thread breaks, as sometimes happens. The sponge itself may tear, a part being retained for months adhering to the mucous membrane. After having withdrawn the sponge the patient ought to take an emollient bath for an hour, injecting water from the bath into the vagina all the time. A second sponge may be introduced immediately afterwards, but it is more prudent to allow the patient to rest for one or two days. The vaginal injections ought to be made very slowly, for I have sometimes seen the occurrence of uterine colics, evidently caused by the fluid penetrating into the uterus.

By taking these precautions, occasionally making an examination by speculum, and suspending the dilatation as soon as any signs of irritation appear, we may in a few weeks—sometimes in a few days—dilate the cavity sufficiently to be able to explore its surface thoroughly with the finger, and even with instruments. During this time the patient ought to remain in bed and take an emollient bath every day. When the os externum is too narrow to allow of the entrance of a tent, incision of the orifice must be practised, but even after this incision has been made it is often necessary to use tents to dilate the cervix and os externum. If we have any reason to suspect cancer we cannot exercise too much care in dilating and examining the uterus, lest the substance should be torn and the wall perforated, as in a case I have seen.

2. *Laminaria digitata* is soft, flexible, and loses much of its

diameter when dried. Its structure being cellular, it dilates greatly under the influence of moisture, reaching a volume of five or six times its original size. The mucous secretions are generally sufficient to effect this, but simple injections may be used if necessary. The young stems are the best, the size varying according to the case. The rind should be retained, and one end should be pointed, whilst the other has a thread attached to it. The tents before being used should be well washed and then damped and dried successively several times.

Laminaria tents act as efficiently and quickly as prepared sponge



FIG. 137.—Laminaria tent polished and perforated.

and are better in some respects; they are more easily introduced when the os is very small, and they cannot break. They can be used indefinitely if care be taken to wash them in a solution of permanganate of potash, they are more quickly and easily prepared, they are abundant and cost almost nothing; but in spite of these advantages they cannot as a rule replace sponge tents beneficially. Sometimes the constricted os is very unyielding, and prevents the laminaria from dilating to its full size at this point, as it does higher up, so that the tent is firmly retained, and cannot be withdrawn without incision of the orifice. Although incision of the os externum is not attended with danger, it is different with the internal orifice, incision of which is dangerous, and any attempt to withdraw the laminaria without incision is more dangerous still. I have seen a case where attempts at extraction produced prolapsus of the uterus, with evident laceration of the peritoneum, which brought on acute inflammation and almost caused death. Nothing of the kind is to be feared with sponge tents, therefore it is clear that they should have the preference.

Artificial prolapsus of the uterus is another means of diagnosis that ought not to be omitted. This can be effected without danger, and even without pain, by seizing the cervix or one of its lips with the uterine forceps or a fine tenaculum hook, and exercising moderate but continuous traction till the os is on a level with the vulva. If the cervix has been naturally dilated by a tumour or artificially by a sponge tent, the finger may then be introduced into the cervix, and even into the body of the uterus, in order to examine it thoroughly. The same means ought often to be employed for treatment, to facilitate the ablation of polypi as well as for several other operations practised on the uterus.

CHAPTER II.

TREATMENT OF UTERINE DISEASES IN GENERAL—INDICATIONS TO BE FULFILLED
IN THE TREATMENT OF UTERINE DISEASES—METHODS OF TREATMENT
AND VARIOUS MEDICATIONS IN UTERINE DISEASES—MEANS OF FULFILLING
INDICATIONS IN THE TREATMENT OF UTERINE DISEASES.

To institute a rational treatment, it is necessary first of all to lay down the indications and contra-indications; afterwards to seek the best means of fulfilling these indications. I have considerable difficulty with regard to the indications, because of their infinite variety in diseases of the womb. If it is difficult to describe them correctly, it is more difficult still to lay down exact treatment. In practice it is of the first importance to remember that it is our patients whom we have to treat and not abstract diseases. However exact our descriptions and precepts may be, they can only represent types undergoing modifications which it is impossible to foresee; therefore, in applying general rules to any individual case, a large margin must be left to the judgment of the attending physician. In spite of these difficulties we can place some finger posts which will help to keep us in the right road. In considering the question from this point of view I shall lay down some general principles to serve as a basis for a system of therapeutics as applied to uterine diseases in general, from which can be deduced the special treatment most suitable to each particular case.

1. The first indication is *the necessity for treatment*. It may seem superfluous to make this remark, but it is not really so. There are so many acute and even chronic diseases cured by nature that it is necessary to point out how different uterine diseases are in this respect. In their case the expectant method is deplorable, although very useful in many other circumstances. Experience teaches us that diseases of the womb have no tendency to spontaneous cure. Nothing can be hoped, even from the changes and evolutions which the uterus undergoes at different periods of life in passing from childhood to puberty, from puberty to the period of sexual activity, and from that to old age. Neither menstruation nor the menopause has any tendency to cure uterine diseases. Menstruation, on the contrary, brings a great many. The menopause certainly has a tendency to lessen some diseases by the cessation of periodical ovulation with its accompanying fluxion and hæmorrhage; but habitual fluxions do not always cease; on the contrary, they sometimes seem to assume a character of greater intensity from having lost their regulator. It is the same with passive congestions which no longer have their periods for disappearing in

the normal alternations of uterine plethora and depletion. Besides, various constitutional affections are apt to show themselves at the climacteric period, so that if one danger is removed another is brought on. As for the changes occurring in the sexual period, they are hurtful in place of being favorable to uterine diseases, often helping to perpetuate, hardly ever to cure them. Beware of hoping that marriage will cure a uterine disease. At the most it can only regulate or increase defective menstruation, and will certainly aggravate any real morbid condition; for one disease that pregnancy has ameliorated or cured (supposing the retrograde evolution of the womb to have been well directed) it has aggravated a thousand. It is of consequence to have clear ideas on this point, that the physician may be able to convince his patients of its importance, so as to make them willing to continue treatment as long as is necessary. We must, however, remember that every functional disturbance or displacement of an organ is not a disease. This term should be reserved for those changes in the generative system which are accompanied by functional disturbance, abnormal phenomena, or pathological processes in this system or in the general economy incompatible with the free exercise of special or general organic functions, or with the continuance of life. Such are the limits beyond which we ought not to venture in pursuing a vigorous treatment, which cases recently reported (especially with regard to displacements) show not to be exempt from danger.

2. Under certain circumstances we must content ourselves with a *palliative cure* and not continue treatment when a perfect cure is impossible, as unfortunately is too often the case. For example, how can we hope for the radical cure of interstitial and multiple tumours, pediculated subperitoneal tumours, of ovarian cysts when sufficiently tolerated by the organ not to necessitate extirpation, in short, of all material changes which are the starting point of functional troubles which art is powerless to remedy, or at least which it cannot attempt without exposing the patient to greater dangers than those of the disease itself; therefore we are often obliged to limit ourselves to a palliative cure, simply regulating the functions of the sexual organs and of the general economy. By venturing further and employing more energetic means we expose ourselves to terrible reactions and even to an exacerbation of the disease itself; or if we succeed in suppressing it we may determine serious disturbance of the whole economy or the appearance of a dangerous disease such as phthisis, which till then was latent, in another organ. It is all the more important that we should restrict ourselves to palliative measures in certain cases, as the perfect integrity of the uterus and its appendages is not absolutely indispensable to the exercise of sexual and general functions. Experience teaches us that women may be affected by organic disorders of this system without being greatly inconvenienced by them. These disorders are often not only compatible with the free exercise of the general functions, but even with the accomplishment of the special functions of the sexual economy. Fibrous tumours and ovarian cysts do not always prevent conception nor induce abortion.

Very often we must limit our aim to the disappearance of functional disorders, pain, hæmorrhage, leucorrhœa, and other morbid phenomena with the restoration of the general health. In morbid conditions characterised by functional trouble, such as disorders of menstruation, or by pathological processes unaccompanied by neoplasm, functional restoration usually coincides with the radical cure of the disease, the treatment having attained both ends at the same time. In displacements and deviations, as well as in diseases characterised by the existence of neoplasm or organic alterations, it is possible to regulate function without restoring integrity of the structure or the position of the organs; and treatment need not be prolonged after the first of these results, a palliative cure, has been obtained.

3. When we consider how seldom it happens that the uterus is for a long period the seat of morbid processes without its organic tissue becoming more or less seriously affected and how little tendency uterine diseases have to spontaneous cure, we must see the importance of another indication: viz. the necessity of always *associating general with local treatment*.

In general affections of the organ and in purely diathetic diseases, especially when the localisation is multiple, or when the accompanying material change is insignificant, it will be readily understood that not only are general means of treatment the most important, but that usually they are of themselves sufficient to produce a definite cure; in the same way local treatment may suffice for traumatic lesions, changes of position, or the development of neoplastic tumours, whether homeomorphous or not, and even when produced by the localisation of a diathetic affection. But although local suffering may be relieved and the general health improved by one-sided treatment, it is very seldom that a permanent cure can be effected without combining general and local means of treatment. The one or other may require most attention according to the case; but they cannot be separated, nor can the one be sacrificed to the other. Aran¹ has made the same remark, and it is strikingly illustrated in the difference between our private and hospital practice. In private practice patients often refuse local treatment, either because of the pain which they fear as a consequence of energetic measures or from repugnance to submitting to the frequent applications and various little operations which may be necessary. On the other hand, they are most willing to carry out any general treatment either internal or external, even baths and hydropathy when advised. Under the influence of such a regimen I have often seen the appetite restored, digestion regulated, nutrition increased, flesh gained, strength recovered. But the uterine pain never disappears, a real cure is never effected; in short, the temporary improvement does not last more than a few months, when the patients fall back into their former state of ill-health and all has to begin over again. Hospital patients, on the other hand, are obliged to undergo local treatment, all necessary operations are performed, dressings made, &c. But it is seldom that general treatment is carried out with

¹ *Op cit.*, p. 162.

necessary regularity. Some patients consider all drugs poison, and often manage to throw their medicine away, whilst baths, mineral waters, food and ventilation are often also defective owing to the limited resources of the hospital. In these cases I have noticed that the local symptoms—pain, tumefaction, granulations, ulcers, leucorrhœa—may disappear temporarily, but if the general health does not improve proportionately with the local disorders the latter soon re-appear.

4. *An appropriate treatment should be applied to every disease.*—It may seem superfluous to point out this indication, but whilst it certainly would be so in reference to any other class of diseases, it is not so with regard to uterine pathology; this is only explicable by the relative ignorance of our predecessors as to the variety of diseases of the womb. We must remember that in uterine pathology, as in the pathology of any other organ, there are species and varieties differing so much from each other as to require differences of treatment. The most characteristic feature of the progress of uterine pathology in our day is the tendency to distinguish the different diseases of the uterus as we distinguish different diseases of the lungs or heart, by their symptoms, their organic lesions and their nature. The most practical application of this nosological distinction is, without doubt, the general indication to vary the treatment according to the case, and to distinguish the special indications arising from the differential diagnosis of the various diseases. I meet so many medical men who have kept up the habit of treating all uterine diseases in exactly the same way (the treatment varying, not with the patient but with the doctor) that I must take this opportunity of warning young practitioners against all uniform and stereotyped therapeutics. Lisfranc did not escape this error. His opinion as to the frequency of engorgement, which he looked on as the basis of all uterine pathology, necessarily led him to prescribe for the majority of these diseases a common treatment, which we find reproduced almost word for word in his consultations. The chief points of this treatment were as follows:—Rest on the sofa, baths twice a week, conium internally, bleeding from the arm once a month; lastly, the gradual reduction of food to the minimum quantity required to sustain life, with the idea that organic resolution is promoted by abstinence—*cura famis*.¹ Nonat has also adopted this mode of treatment, though not so exclusively. Others have made almost all uterine pathology to consist in replacing the womb, whilst others insist far too much on antiphlogistics. Some wear out the uterus by continual applications; others limit themselves to the use of general means. One practitioner invariably gives hot baths, a second cold baths; some prescribe hip-baths, others general baths. Now, we cannot guard ourselves too carefully against any exclusive treatment of uterine diseases in general, or of any special means in particular. Disease varies in form and nature in the uterus as in other organs; treatment ought to vary likewise.

¹ *Bulletin de l'Académie de Médecine.*

5. It is very important to consider *the nature of the disease*.—Uterine diseases are very seldom of a reactionary nature; on the contrary, they may be classified as *affective diseases*, i. e. dependent on a general state. It is not that the general condition from which they derive their nature has always been the determining cause of their development; but it impresses its character on the disease whether primarily or not. They may arise in two ways, either following the development of a general affection or being produced by a disease originally local. The diathetic affection exists; it has already given proof of its existence, though it has not yet attacked the uterus. However, it is not long before it fixes itself there, because this organ is more disposed than any other to be affected, owing to its position, its inclination, its monthly congestion, the increased vitality developed in it by pregnancy and the traumatism determined by an abortion or by delivery. The diathetic affection manifests itself spontaneously; at most it only awaits a favorable opportunity for taking possession. At other times the uterus is predisposed to disease. Menstrual troubles, sexual excess, over-fatigue, a miscarriage or difficult labour cause congestion, engorgement, hypertrophy. Disease is established. That would be of no consequence if the woman were healthy and strong; all would then disappear with a few simple precautions. If, however, a diathetic tendency be present the tendency becomes a localised affection, it fixes on the uterus, impressing its special character on the already existing disease. What occurs to a man suffering from blennorrhagia or engorgement of the prostate happens to the woman affected by uterine disease. These illnesses when recent and uncomplicated are easily cured in vigorous individuals. But given the existence of a special diathesis, these maladies open the door to the inroads of an affection till now latent, and cure is difficult.

6. That we may perceive, therefore, the leading indication, it is necessary first of all to determine the *diathetic affection* which is the essential cause of the malady. Any constitutional disease may become localised in the uterus; it is certainly so with cancer, rheumatism, gout, herpetism, scrofula, syphilis, &c. I do not think that any practitioner can doubt the correctness of my statement with regard to the majority of the affections just named. I myself for a long time retained doubts as to gout; but lately I have seen a case which seems to me sufficiently conclusive to force conviction.

Case.—A lady, aged forty-five, is mother of two grown up children in good health; her father is gouty, her mother comes of a gouty family, and her brother is asthmatical. She has at various times suffered from pain and swelling of the joints, especially of the small articulations, several of which are deformed. The urine is often charged with brick-red deposit. She suffers to a small extent from hæmorrhoids, but her digestive functions are in good condition. She has repeatedly had serious attacks of pulmonary congestion, hæmoptysis, &c. For some time back the lungs have been healthy, but the uterus is affected with chronic congestion, occurring apparently without cause; twelve days after the catamenia there is an exacerbation causing acute pain and rendering walking impossible. This state is accompanied by serious general

disorder; in a few days there is an improvement allowing the patient some days' rest before the return of the monthly period. This is ushered in with great pain, a condition which never existed previously; after two or three days the pain ceases and the hæmorrhage is more abundant than before the uterine disease. I have sometimes known this patient for five or six months to have hardly any suffering or congestion, and then begin to suffer anew. These pains and the morbid conditions developed successively in the limbs, chest, and uterus, keep her extremely thin, and produce a great tendency to perspiration and a general weakness in spite of an excellent appetite and good digestion. I do not know whether I have given a sufficiently exact description of this case to convince my readers that this succession of morbid conditions, so serious and at the same time so variable, can only be explained as attacks of visceral gout.

I do not think any one can doubt as to the influence of catarrhal, chlorotic, herpetic and scrofulous affections on uterine diseases.

7. *Inflammation* also plays a great part in the production of uterine diseases. Sometimes it constitutes the basis or even the essence of the disease; at other times it plays only a secondary rôle to the diathetic affection. In the first case the uterine disease may be called reactionary; in the second, as in the case just cited, affective. Thus, as the result of traumatism or of causes which may be called traumatic, such as sexual excesses, fatigue during menstruation, abortion, difficult labours, operations performed on the genital organs, acute inflammations are often developed which are, to speak correctly, reactionary, such as metritis, ovaritis, peritonitis; these inflammations become chronic if they are too aggravated to undergo natural resolution, or too slight to terminate in suppuration or gangrene, and the disease retains the inflammatory nature with certain modifications.

At other times the disease has begun with inflammatory symptoms but is evidently kept up by a diathesis retaining nothing of an inflammatory character but the form or a state of special complication. Nevertheless, at a given moment, under the influence of unforeseen accidental causes or even of normal processes, such as menstruation, this condition may produce an increase in the inflammatory element which will now occupy the first place among the existing morbid phenomena, owing to the danger it involves. But whether inflammation form the basis of the uterine disease or be only an element of secondary importance subordinate to the diathesis, or an accidental coincidence more or less serious, it always presents important indications. In the one case the leading indication is to subdue it, in the other this is of secondary importance—secondary, that is to say, to that of the diathesis; but in all cases it deserves the most serious consideration.

8. Another important source of indications is the *asthenic nature* of the majority of uterine diseases, no matter what part inflammation plays in them. If we consider the condition of the vital forces, *i. e.* the resistance which the economy is capable of making in this struggle, we can assuredly say that generally there is not a sufficient power of resistance. Occasionally it may exist in acute uterine disease and in inflammatory attacks, which give a new character and nature to the disease. But generally the reverse holds good. As a result of the chronic state of the malady, of the sympathetic disorders of digestion

and innervation, and of the consequent impoverishment of blood, there is a state of general debility which not only takes from patients the tone which gives energy and activity to the whole system, but also deprives them of what the ancients called *motor force*. Besides the atony with which the muscular system and the whole of the organism is affected, we may say that the majority of uterine diseases are characterised by *asthenia*. Therefore, after having subdued inflammation or congestion by blood-letting or otherwise when necessary, we must hasten to overcome the diathesis which has a share in the disease, and above all to raise the strength by enriching the blood, soothing the nervous system, facilitating digestion, stimulating nutrition, and by giving an impetus to the repairing processes in all the organs.

9. The *chronicity* of uterine diseases is also an indication of considerable importance. A small number of uterine diseases have an acute course. Such are those diseases which may be called traumatic, as well as those having a sthenic character and tending to inflammation, and those consequently which participate in the nature of reactionary affections, such as cases of metritis, ovaritis, hæmatoceles at their commencement, peritonitis, inflammatory attacks of pelvic peritonitis or peri-uterine inflammation, active hæmorrhage, &c. But the majority, on the contrary, are chronic in character; there is something slow in their manifestation and a natural tendency to last indefinitely. This chronic character depends on two causes: primarily, on the influence of the diathesis, or at least on the asthenic nature of the malady. All diathetic affections are difficult to cure. They are deeply rooted in the whole economy; the whole mass of the tissues needs to be gradually modified, a requirement which necessitates a long and uninterrupted treatment. Even when a uterine disease cannot be attributed to a diathesis, its asthenic nature calls equally for reconstitution of the blood and restoration of the whole system. Secondarily, it depends on special causes peculiar to the uterus, which keep up the disease by bringing obstacles in the way of its cure. The womb is not only placed below all the abdominal viscera, which by their weight tend to keep up the congestion as well as to cause pain mechanically; not only is it subject to the troublesome and repeated excitement of conjugal relationship, but every month it is the seat of a normal sanguineous discharge, which to a great extent undoes the good derived from previous treatment, giving at the same time new life to the disease. Those patients are fortunate who escape with only a monthly periodical flow, many having a recurrence every fortnight. These periodical discharges, besides tending to perpetuate the disease by the accompanying congestion, hæmorrhage, pain and other pathological conditions, are troublesome from their necessitating, in the majority of cases, an interruption to treatment, which delays cure. Therefore we must expect to lose every month part of the good we have already gained, and must content ourselves with a very slow and gradual improvement.

As the chronicity of the disease cannot be altered, an appropriate treatment should be adopted, which can be prolonged indefinitely.

If a suitable treatment, local as well as general, is applied, patients soon obtain marked relief. Leeches, a purgative, baths and douches, with tonics, when rightly employed, seem to rid them of all their pains and discomforts. They think themselves cured. But the physician must not deceive himself; the relief is only temporary. The organs have not sufficient tone to preserve them from a relapse; the diathesis still exists; the uterine discharge will soon recur, forcing us to discontinue treatment, and taking possession of the organ will throw it back into its original condition. Therefore, I repeat, as the disease is chronic the treatment must be so also.

10. More is needed: we must *prevent relapses*. Treatment must be continued for a considerable time after an apparent cure, even after a real cure. The causes of the chronicity of uterine diseases are, at the same time, causes of relapse, and if we would destroy their power we must give tone and strength to the whole economy, and especially to the diseased organs, in order to preserve them from relapses.

11. *The elementary nature and form* of the uterine disease is another source of indications which must not be neglected in treatment. The various *elements* which contribute by their union to give the disease its form, physiognomy, and special appearance, may combine in different ways or be associated with such or such a disease as primary or secondary element. In this way fluxion, congestion, hæmorrhage, leucorrhœa, ulceration, pain, engorgement, hypertrophy, displacement, may be alternately principal or accessory elements of the disease, and become the source of primary or secondary indications. Many of these elements are not mere alterations of tissue or modifications of local life, but morbid processes of the whole economy, having the uterus for their starting point or goal, and passing for simple affections. These affections may remain simple or become complicated by several other pathological elements. This remark applies especially to the most common of these elements—*fluxion*. Whether it be an original element of the disease or a later complication, fluxion is the morbid process against which we have to struggle with most persistency in the treatment of uterine disease. We have to contend not only with imminent or established pathological fluxion, but even with the periodical physiological fluxion, at least in its derangements, and to prevent the consequence of its baneful influence on the malady. I cannot too strongly recommend the excellent treatise of Barthez on this subject ('*Traitement Méthodique des Fluxions*'). The distinction made between the fluxion that is imminent and the one that is established is very practical. The precept to use revulsives to prevent the first from becoming fixed and to employ derivatives to arrest the second is excellent.

Congestion or vascular fulness of the organ is often only an established fluxion. It may then be called active congestion, and indicates the necessity for revulsives or derivatives. When it is passive it is none the less an important and frequent source of indication, which is best fulfilled by depletion.

Engorgement, or the presence of interstitial plasma, which is something between œdema, congestion and hypertrophy, naturally indicates the use of resolvents.

Hypertrophy, or increase of the uterine tissue by excess of assimilation or defect of decomposition, indicates reabsorption. When this hypertrophy is localised on some point of the organ and some portion of one of the tissues, and has given birth to granulations, fungous growths, polypi, fibromata, &c., it may become the source of special indication, that of the local destruction of abnormal tissue by ablation or otherwise.

The discharges themselves are sources of therapeutic indication, only these are often of minor importance, subordinate to others arising from the morbid condition, whether diathetic or otherwise, on which these discharges depend. For example, fluxion, congestion, organic alterations, in reference to hæmorrhage; catarrh, chlorosis, herpes, scrofula, with respect to leucorrhœa, furnish indications to be fulfilled primarily, being of greater importance than those even of the hæmorrhage or leucorrhœa. Ulceration and the consequent more or less serious loss of substance, whether granular or fungous, becomes in its turn a source of indication. Subordinate as it is to the treatment of the diathesis on which the ulcer often depends, the indication to bring about cicatrisation is not the less urgent.

Pain is one of the most important sources of indication; it may exist in the uterus or around it, or sympathetically in distant parts. It may be transitory or persistent; it assumes different forms—hyper-æsthesia, neurosis, or neuralgia—and may be idiopathic, symptomatic, or sympathetic. It must be subdued whenever it appears, for pain increases the fluxion and all the elements of the malady, and is sufficient to bring them back if we have been fortunate enough to get rid of them. We must attack it at every period of the disease, and even after its cure, for it sometimes persists after the organ has returned to a satisfactory state of health.

Lastly, the position of the uterus, the condition of its suspensory ligaments, the changes in its normal relationships, all become sources of indications. Only we must find out whether the morbid symptoms really depend on the displacement or are independent of it. When the disease is confined to a deviation or displacement, even then the indication may be complex—1. To prevent the abdominal viscera, by means of rest, attitude and supporting belts, from increasing the displacement of the organ and causing pain. 2. To render the displacement bearable by palliative treatment or by the use of mechanical support. 3. Lastly, to obtain a radical cure by attacking directly the causes of the displacement or deviation.

12. Special indications arise from *neighbouring disorders* accompanying uterine disease. The condition of the urine ought to be examined. In acute as well as in chronic diseases we often find this excretion abnormal. Lithiasis, concentration, deposits of various kinds, are all sources of indication, as well as tenesmus, inflammation, catarrh, frequent or difficult micturition, mechanical compression of

the bladder or urethra by uterine tumours, &c. Then we have disorders connected with the rectum, diarrhœa, tenesmus, hæmorrhoids, glairy, mucous or bloody discharges, and, above all, constipation, the most common and hurtful of all complications, keeping up as it does pelvic congestion.

13. What can be said of the *sympathetic reaction* of uterine diseases on the nervous system and digestive economy but that the consequent functional disorders are sources of indication? Let me, however, remark that the majority of the indications arising from these disorders are already fulfilled by the means employed in combating asthenia, raising the tone of the whole economy, soothing pain, regulating the nervous system, improving the condition of the blood, increasing nutrition, renewing the whole constitution.

14. What can be said too of the very serious *complications* which sometimes increase the severity of uterine diseases and prevent a continuance of the treatment, but that these complications are new sources of indications? From the point of view of preservation of life or of general health they may take precedence of those arising from the disease of the womb, they may even oblige the physician to respect the uterine disease, as a sort of natural revulsive guaranteeing the general health against the rapid and disastrous evolution of the coexisting disease. This may be the case where pulmonary tuberculosis is coincident with leucorrhœa or uterine ulceration. It is often imprudent to insist on the cure of uterine diseases in phthisical patients. If it is wise, as Bennet¹ says, to modify uterine symptoms when they become oppressive, we must respect the kind of equilibrium established between the uterine affection and pulmonary phthisis when the symptoms are bearable; all the more so as in these cases the use of energetic means is not always without danger. We must remember in this case, as in that also of hæmorrhoids, rectal fistula, gouty deposits in the small articulations, &c., *that there are diseases which it is dangerous to cure*;² and that the aphorism of Hippocrates³ is equally true with reference to diseases as to treatment:—"Δύο πόνων ἄμα γινομένων μὴ κατὰ τὸν αὐτὸν τόπον, ὁ σφοδρότερος ἀμαυροῖ τὸν ἕτερον."

METHODS OF TREATMENT AND VARIOUS MEDICATIONS IN UTERINE DISEASES.

Having enumerated the indications, the question arises, what method should be employed in the treatment of uterine diseases, and what *medications* will suitably fulfil the indications for this treatment?

The *medication* is the direct answer to the indication: it is an impression produced on the organs by a means or the association of several means, and intended to modify the economy in one sense or

¹ *Bulletin général de thérapeutique*, t. lxxix, p. 49. Paris, 1865.

² Raymond de Marseille, *Traité des maladies qu'il est dangereux de guérir*. Paris, 1816.

³ Section 2, aphorism, 46.

another. The method is the order to be followed in the use of the medications, and of the means by which they are carried out: it is simply a help which we give nature when she tends towards cure; or a way indicated to her, an impulse given to her from different points all directed to one end; or a rule imposed on her without apparent reason, but which experience has proved to be wise.

Methods of treatment according to Barthez¹ may be divided into *natural, analytical, and empirical*. It is needless to say that we can seldom in the treatment of uterine maladies limit ourselves to *natural methods*, because these diseases rarely have any tendency to spontaneous cure. On the contrary, we must often have recourse to *analytical methods*; for these diseases are usually the product of one or more elements of one or more essential affections, and of several simpler diseases existing as complications. They are almost always complex; at least they are complicated with all the morbid conditions consequent on the special structure and functions of the womb. Therefore we must simultaneously treat the diathetic affection, which often gives to the disease its character, and the morbid processes which give to it its form or which determine its exacerbations, its relapses and its chronic nature, or sometimes the simple disorders of menstruation which keep it up or increase it. In this way inflammation, engorgement, hypertrophy, granulations, ulcers, necessitate the use of certain means, at the same time that the diathesis is treated by an appropriate *medication*. Hæmorrhage, congestion, simple fluxion are treated as they arise according to their relative importance; *e.g.* if fluxion is defective, the use of attractives is indicated; if excessive, then depletion or derivatives are indicated. Lastly, we must sometimes have recourse to *empirical methods*; for the disease, even when capable of being analysed, may resist the ordinary means of treatment, showing no tendency to be cured, or it may be kept up by a specific affection the cure of which can only be effected by a specific medicine which experience has proved to be efficacious. This happens in many chronic diseases, especially when neuroses or local indolent engorgement predominate; in such a case an acute attack may bring about a change which may become the starting-point of a favorable impetus towards cure.

Medications.—The methods of treatment suitable to uterine diseases having been determined, we must carry out the treatment in the order indicated by the use of the general and local means at our disposal. Here also we find a medium between the method and treatment. Every means of treatment produces several results, sometimes the one, sometimes the other, successively or simultaneously; on the other hand, the association of several means may be necessary to produce a single impression on the economy, just as the concurrence of several processes is necessary to accomplish a single function. The means therefore cannot be applied directly without an intermediary in answer to the indication.

¹ Préface du *Traité des maladies goutteuses*, 1819; V., *Nouveau Éléments de la science de l'homme*, &c., 3^e éd., t. ii, p. 282. Paris, 1858.

The association of various general and local means constitutes a *medication*; and it is by the help of medications that we respond to the indications. The true answer to the indication is not the medicine but the medication or medications. One or several medications answer to one or several indications. Sometimes a single medication suffices for one indication, but it may include several medicines or kinds of medicines. Sometimes two or more medications must be associated to respond successively or simultaneously to two or more indications. The distinction is so essential between medicines, *i. e.* the means and methods of treatment, and medications, *i. e.* the manner of responding to an indication by the effect which such remedies produce, that it is as impossible to group these medicines by medications as by indications. The combination of several means is necessary for one medication, and, on the other hand, the same means may serve in several medications or may carry out several indications at the same time. Bleeding, for example, is a depletive, derivative, revulsive, debilitant; purgatives are not only evacuants, they are derivatives, revulsives, resolvents; hydropathy is at the same time sedative, tonic and revulsive; vaginal irrigation may be refrigerant, sedative, astringent, &c. The same medication makes use of various means according to the case; thus, resolvent medication utilises evacuants, revulsives, alteratives, hydropathy, starvation, &c.; the choice depends on the patients, on the disease, on the constitution, on the remedies at our disposal. We must therefore postpone reviewing the means to be employed in the treatment of uterine diseases, contenting ourselves with grouping them according to their natural affinities. As for the medications, they are arranged naturally like the indications to which they are intended to respond. When I set out in quest of the indications I simply followed the order we adopt in practice to discover them and to determine the disease, and by enumerating successively their different sources I showed how they arise. But the indications, when once found, ought to arrange themselves in our mind according to their various degrees of importance, according as they are common or special, local or general, major or minor, primary or accessory. The medications respond so directly to them with regard to the curative effects which we hope to obtain from them, that we cannot but arrange them in this essentially therapeutical order. There is the same difference between the order in which the indications present themselves and that in which the medications appear, as between the way of making a diagnosis and that of instituting a treatment. Therefore I distinguish between common and special medications.

Common medications are those which respond to common indications, *i. e.* indications which may arise in every uterine disease. I have already said that the various processes which go to make up menstruation are almost invariably sources of indication in uterine pathology. By their simple presence, by their absence, excess, derangement, by the pains accompanying them, they may of themselves constitute morbid states, and in the majority of cases be added to the disease as cause, effect, or complication; or they may hinder the treatment or

retard the cure indefinitely. We must be able to increase or diminish the flow, dissipate the congestion, relieve the vascular system, or deviate the blood which flows towards the organ by directing it towards a distant organ. To each of these indications there is a corresponding medication, attractive, depletive or evacuant, derivative, revulsive. Sometimes we wish to attract the sanguineous flow towards the uterus by the help of rubefacients, vesicants, leeches to the labia, groin, anus, or cervix, by hot, aromatic, or mustard foot-baths or sitz-baths, by stimulating purgatives, enemata, or suppositories, by hydropathy, electricity, &c. At other times we *empty* the uterine vascular system by leeches to the cervix, scarification, cupping, purgatives, &c. Sometimes in cases of fluxion and congestion we deviate, *i. e. derive* the blood, by applying leeches or blisters to the groins, hypogastrium, or loins, or we may cup. Sometimes we turn away or *divert* this current and the movement which produces it by blood-letting from the arm, cupping the breasts, administering a purgative, or even an emetic, or by directing the fluxion to the surface of the whole body by means of vapour baths and other hydropathic operations, &c. I will explain afterwards that it is not enough to be able to use these medications; we must learn how to apply them opportunely.

Special medications correspond to indications which do not occur in every case, but which vary according to the nature of the affection, the pathological form assumed, and the organic alteration produced by it. Some are *local*. For example, medication consisting of appliances which are reducing and supporting, for the treatment of displacements, deviations, &c.; atrophic or hypertrophic in cases of uterine hypertrophy or atrophy; substitutive and modificatory in cases of superficial alterations of vitality and fluxion, of granulations or ulcers; destructive by the knife, caustics or fire, in cases of more profound organic alterations, or considerable tumefaction, or formation of new elements and of homeomorphous or heteromorphous tumours. Other medications are *general*, or both *general* and *local*: antiphlogistic, directed against inflammation, no matter where the seat or what the extent may be; resolvent, with which the atrophic medication is often associated, against engorgement or other causes of permanent increase of volume; anti-diathetic, whether simply alterative or specific, against general affections, the localisation of which keeps up the morbid state; sedative and narcotic, against pain, whether it be an essential element or a complication; antispasmodic, against spasm and nervous erethism; tonic, against weakness, want of tone, and strength; restorative, against digestive troubles, disorders of nutrition, impoverishment of blood, chlorosis, &c.

Opportuneness of treatment.—This is another great principle in general therapeutics, which is specially applicable to uterine diseases. A brief explanation of it will form the natural connecting link between the enumeration which I have just made of the principal medications used in uterine therapeutics and that which I am about to give of the means by which we realise these medications. In the cure of uterine diseases, next to precision of diagnosis, opportuneness of treatment

is the best guarantee of success. The treatment, medication and means must all be employed at the right moment. Treatment may be useless in a few cases, indispensable in almost all, but hurtful at one time, beneficial at another. It is the same with medication and the means employed. Very often the same end may be reached by several medications, the same medication by several medicines and means; in short, there are different ways of treating a patient. There is opportuneness with regard to the disease, the medication and the means, but especially with regard to the patient; for the various parts of the economy are not in a good condition, the constitution is often enfeebled, the blood impoverished, the nervous system affected, all the functions languid.

I cannot too carefully impress on my readers the necessity of examining all the organs attentively. It is not enough to examine a patient for purposes of diagnosis; we must also examine with reference to treatment. By carefully investigating the various functions, systems and organs, we sometimes find disorder where we least expected it. But that is not all. In treating disease it is necessary to make an impression on certain organs by means of medicines. Only there are different ways of producing this impression, different means of arriving at the same end. True art consists in being able to choose the best, the one most appropriate not only to the disease, but to the patient. That is why we must interrogate every function, examine every organ to learn if we can and should act on the stomach, the intestines, the kidneys, the skin, &c. How often after having made a careful examination do we find another disease counter-indicating treatment! How often do we find the condition of certain organs such that treatment would do more harm than the disease! Supposing, however, that the patient bears the treatment, and that it is applied at the right time, it is not enough unless the medication and the means are used opportunely. It is of more importance to be able to seize the opportune moment in treating uterine than other diseases. The recurrence of menstruation introduces such important changes into the condition of the organ, that we must not only suspend the usual treatment during the whole of the monthly period, but we must utilise this time by employing new means, which are only efficacious when used at the right moment. I have seen many patients who had undergone treatment which they assured me had aggravated their disease, and yet the very same means were most successful when used by me at an opportune time.

Let us take an example. One of the means which gives the most marked and rapid relief in the treatment of uterine disease is the application of leeches to the cervix. Struck by my success, all my pupils have adopted this practice; but sometimes I have been called on to rectify their error, and to repair the troublesome consequences of treatment clearly enough indicated, but inopportune or insufficiently carried out. This practice, though less frequently adopted than it deserves to be, is yet common enough to have allowed me to see a certain number of patients from different parts of Europe who had undergone this little operation in their own country. With several I

have been obliged to have recourse again to the same means, and sometimes have had considerable difficulty in overcoming the opposition of my patients, who remembered that a previous application had increased their pain and all other symptoms, and had even developed new troubles. It is very easy to explain these differences, and I have laid down rules calculated, I hope, to prevent accidents resulting from an inopportune application of leeches, whilst retaining so valuable an agent in uterine therapeutics. Leeches may be applied to the cervix during any part of the intermenstrual period, with the exception of the last week, provided they draw a sufficient quantity of blood. If not, they must be applied again and again if necessary, because after an insufficient flow of blood we always see an aggravation of symptoms, especially of pain. The reason is this:—The suction of the leeches has determined a flow of blood towards the organ which has not been evacuated. The vascular system is more gorged than before, hence the marked aggravation of all the symptoms and of the disease itself. The only remedy is to make a fresh application of leeches, and if requisite another, till an abundant hæmorrhage has caused depletion of the blood-vessels. Leeching the cervix during the week preceding menstruation may be indicated by the absence or insufficiency of the fluxionary movement accompanying the recurrence of the monthly period. In this case it acts as an attractive inducing fluxion towards the uterus. As this indication, however, generally occurs in young girls, and as it can be responded to almost as well by leeching the groins or the labia, this latter operation should be preferred. If, however, we have to do with another disease, metritis for example, or uterine congestion, for which the application of leeches to the cervix is clearly indicated (as a depletive, not as an attractive), we must beware of making the application during the days which precede menstruation, especially if we have to do with a hæmorrhagic congestion. The flow of blood towards the uterus commences a few days before the periodical discharge takes place. The organ, under the influence of this continuous fluxion, becomes gradually congested, and this congestion produces disease if the natural hæmorrhage, which is the crisis and the third act of this morbid drama, does not arrive in time or is insufficient. If, then, the organ is suffering from simple congestion or an inflammatory condition or is the seat of hæmorrhages which, in place of relieving, add to the morbid condition, it is evident that the application of leeches will only increase pre-menstrual congestion and consequently all the accidents produced by the pathological congestion or inflammation. The natural congestion preparatory to menstruation is of itself a troublesome occurrence, and we know that in the majority of uterine diseases the return of the monthly period is coincident with the return and aggravation of all the principal accidents. What then will happen if this natural congestion is increased by the application of leeches, which will add to the usual afflux of blood preceding menstruation? Even if the flow of blood were to be abundant it would not prevent the pre-menstrual congestion from being increased and all the symptoms from being aggravated, because it would come too soon

to be the crisis, and would not prevent menstruation from taking place at the usual time, within a few days of the application of leeches; nor could it prevent the manifestation of all the usual symptoms, intensified in consequence of the attraction which has been followed by insufficient or useless depletion.

These theoretical explanations are only the deduction of facts learned by observation, for I have seen serious accidents produced by inopportune leeching. Therefore, as a general rule, the cervix ought not to be leeches in the week preceding menstruation.

In the week following menstruation, on the contrary, the conditions are quite different. The organ remains congested, especially if the critical hæmorrhage has been insufficient; but the fluxion which has preceded the hæmorrhage and determined the natural congestion has been extinct for some days. Any depletion at that time will be beneficial to the uterus. The suction of the leeches will not reawaken the fluxionary movement which has just ceased, and which will only be reproduced normally in a month. We can, therefore, without fear apply leeches to the cervix at this time. If the flow of blood is insufficient it will not be followed on that account by any accident: the organ will be soothed, though incompletely. If, on the contrary, it is abundant and capable of causing disgorgement of the vessels of the uterine system, the amelioration will be as complete as rapid, and the effect produced will sometimes exceed all our expectations. To obtain this result we must not fear to apply leeches again the following day if the first application has been insufficient, and to follow it up by purgatives, which are often found to be the necessary complement to this method of depletion. Practice is rewarded by a success exceeding the anticipations of theory. Therefore, as a general rule, the cervix should be leeches the day following menstruation, or at latest during the week following it.

What I have said as to the opportune application of leeches could be said with regard to other means—douches, sitz-baths, irrigations, purgatives, ergot, &c. But no example seemed to me so striking as that of leeches, and I have so often seen the difference in the effects produced by their application at different periods, that I cannot have a doubt as to the importance of the time chosen to make use of this and other means.

MEANS OF FULFILLING INDICATIONS IN THE TREATMENT OF UTERINE DISEASES

It is not enough to state the general way of preparing and administering these means, the *modus faciendi*; we must also determine the manner and the time of employing each one of them under given circumstances in order to realise the medication indicated. It is the only way of successfully applying to other cases the means which have answered in any given case. To know why these means have succeeded, is to know what medication they have realised and to what

indication this medication has responded. The means of fulfilling the indications are general and local.

I. *General Means*

The general means are hygienic or medicinal.

1. The *hygienic means* are : posture, rest or exercise, regimen, &c.

Rest is often indispensable. The *posture* that ought to be adopted by the patient is generally neglected unless the physician makes it his business to give precise instructions with regard to this important though small detail, and sees that they are attended to. In serious cases, always in acute and often in chronic diseases, the patient ought to remain in bed. She should lie horizontally, the pelvis on a level with the shoulders or higher, the head resting on a pillow, the legs and thighs flexed and supported by pillows under the thighs ; in short the muscles relaxed by semiflexion. The bed ought to be hard so that the pelvis does not sink in it ; if the mattress is not of hair it is well to put a hair pillow under the pelvis. Spring mattresses combine resistance with elasticity. Feather beds must be forbidden absolutely.

This prescription is indispensable, not only in acute diseases when the patient feels the necessity of rest and semi-flexion, but in all cases of hæmorrhage whether occurring at the menstrual period or not, and in several chronic maladies, especially where there is a risk of hæmorrhage, as in polypi, fibromata, &c. ; or in inflammatory cases, as in ovaritis, metritis, &c., absolute rest in the position of semi-flexion and on the back, are often the most important elements of success. In certain cases, *e.g.* retroflexion, the contrary position, *i.e.* pronation, must be prescribed.

When the disease is chronic, it is not generally necessary to confine the patient to bed. She may be on the sofa during the day if she takes care (when necessary) to keep in the position I have just indicated. In spite of the great importance which I attach to rest, I do not agree with Lisfranc and his school, in thinking it ought to be invariably prescribed in chronic diseases. Absolute rest for any length of time, especially in bed, is weakening and leads to loss of appetite and impoverishment of blood which play so important a part in the existence of uterine disease.

We must therefore recommend exercise in these cases ; but the exercise must be moderate, in proportion to the strength of the patient, and of a kind not likely to excite pain. Therefore we must sometimes content ourselves with carriage exercise on a smooth flat road, making the horses if necessary walk, the patient lying in the carriage and being protected from shaking by air-cushions. When the patient can take active exercise without suffering it is much better ; in such cases she should be advised to walk, taking the precaution to choose a smooth road and stopping as soon as she feels any pain. She should gradually increase the length of her walks, but it is better to take several short ones than one that is too long, and she ought to lie down immediately afterwards. A hypogastric belt is often of great use by supporting the weight of the abdominal viscera

and so preventing pain when walking or standing. Sitting is sometimes very injurious, as it has a tendency to cause pelvic congestion. When patients are obliged to sit, they ought to choose a hard seat or an air or water cushion, which should be flat. Those which are excavated in the centre are injurious to women suffering from uterine diseases or from hæmorrhoids. They spare the patient the pain caused by direct pressure on the hæmorrhoids or on the uterus; but they congest the anus and lower part of the rectum, by the circular pressure exercised on the seat.

The physician ought to prescribe the physiological rest of the organ in addition to the mechanical rest. This rest is indispensable not only in acute cases but in the great majority of other diseases. Engorgements, deviations, prolapsus, do not always counter-indicate sexual intercourse. But whenever there is pain or fluxion, inflammation, hæmorrhage, or a great tendency to the recurrence of any one of these morbid elements, coitus must be absolutely forbidden, and the patient advised not to share her husband's room. This rule cannot be too strictly enforced; unfortunately, it is too often infringed as relapses testify. It is often difficult to get our instructions carried out by the poorer classes; indeed, they are not always attended to by the rich. In such cases it is well to advise patients of the former class to go to a hospital, and those of the latter to go to a hydropathic establishment or to mineral waters when expedient, with the double object in view of undergoing treatment and of being separated from their husbands. When there is only engorgement, congestion, or general symptoms without local inflammation and a long time is required to complete the cure, intercourse ought to be allowed at distant intervals, for there are patients of a passionate nature for whom it is necessary. Only I advise them, as I advise men affected by diseases of the prostate, to accomplish the act quickly. Unsatisfied erotic desires which keep up a fluxion, a nervous excitement, a persistent orgasm, are infinitely more injurious than coitus when quickly performed. It is therefore better in some cases to submit to the inconveniences of conjugal relationship than to enforce abstinence; but it must be on condition that the patient is spared the fatigue of a prolonged state of erethism.

Coitus may have to be forbidden for another reason: in order to avoid the possibility of pregnancy, which occasionally though rarely occurs before a cure has been obtained. If the physician considers that pregnancy will have an unfavorable influence on his patient he has no other course to take.

The regimen in acute uterine diseases is the same as in all acute diseases. In chronic uterine diseases, atony, impoverishment of blood, debility of constitution, indicate the necessity of tonics and restoratives. The best tonic is a good regimen; the best restorative generous diet. We must therefore prescribe roast meat, green vegetables, ripe fruit, wine, &c. Farinaceous food must be forbidden, but green vegetables and fruit allowed to prevent constipation. When the state of the digestive functions will not allow the use of beef and

mutton, we must content ourselves with white meat, chocolate and milk. I often prescribe partial milk diet to patients whose digestive mucous membrane is in an irritable state: in such cases the milk should be drunk warm and taken from the same cow or goat, which ought to get from half an ounce to an ounce of salt or iodide of potassium daily. If there is difficulty in digesting the milk it may be mixed with lime water or a little Vichy water or soda-water. Milk and water in equal proportions answers as a laxative with some women. There are various ways of improving the appetite and digestion, preventing constipation, &c., without having recourse to medicines, to which I will afterwards refer when treating of tonics and restoratives.

We must also pay attention to the clothing, dwelling and climate. It is often desirable that flannel should be worn next the skin. Residence in a dry warm climate is very beneficial, especially to patients who are accustomed to a damp cold climate. According to Donn ,¹ who lived long enough in Montpellier to be able to judge of the climate, it is superior to any other town in France. I have seen a considerable number of women affected by uterine diseases cured there, who had been treated unsuccessfully elsewhere by physicians of high reputation. I have often observed that the same means which had been used in other latitudes without any beneficial results produced a decided improvement after a few weeks' trial in Montpellier, and very seldom more than one winter is required to effect a cure.

II. The *medicinal means* are: bleeding, purgatives, hydropathy (including mineral waters, baths of all kinds, with injections), resolvents, tonics and restoratives, sedatives and irritants.

1. *Bleeding* may be practised by different methods—by the lancet, by leeching, cupping or by scarification. It is depletive, derivative or revulsive. *General bleeding* has been recommended by Lisfranc and his school. Nonat still has recourse to this method frequently. It is usually practised in the arm. Sometimes a considerable quantity of blood is drawn—from eight to ten ounces—so that the operation may have a depletive effect on the whole system. It is in such cases said to be spoliative; but more frequently a much less quantity is drawn—five to six ounces; it is then said to be revulsive. It is practised immediately before menstruation to diminish the flow of blood towards the uterus, or during menstruation or immediately afterwards, to divert the flow in another direction. As a rule, I consider spoliative bleeding as counter-indicated; if it has the advantage of increasing absorption it has the serious drawback of weakening the patient. On the other hand, bleeding from the arm as a revulsive may be of great use in cases of metrorrhagia, but especially in active menorrhagia; also in cases of imminent or acute fluxion, or fluxion of long standing previously set in motion by other means; or of amenorrh a, of vicarious menstruation with consequent congestion of other organs, such as the lungs. It is very seldom that bleeding from the foot is indicated. This little

¹ *Conseils aux familles sur la mani re d' lever les enfants*, p. 300. Paris, 1864.

operation only increases fluxion towards the uterus. It may, however, be indicated in cases of amenorrhœa with disordered menstruation, when the fluxionary movement is directed towards the head or the chest. As an attractive it may be resorted to in place of leeching the uterus or vulva. It may even act as a derivative of fluxion localised on the uterus and previously diverted by local depletion. This is, perhaps, the only case when it is indicated in uterine diseases. *Leeching and cupping* are, on the contrary, often indicated. They may be applied round the pelvis or close to the uterus, or to the cervix itself. In the case of girls suffering from amenorrhœa, or when menstruation has been suddenly suppressed by some physical or moral excitement, they may be applied to the upper part of the thighs, to the groins or to the labia. In this way fluxion is directed towards these points and to the uterus, whose vascular system is in direct communication with that of those regions; they play the part of a direct and powerful attractive to the blood circulating in these vessels, and are very efficacious. At other times, in applying them to these parts, especially after having practised direct depletion of the uterine vessels, we succeed in diverting the current of blood which is directed too intensely or persistently towards the uterus. This derivative medication is effected still more efficaciously in certain circumstances when applied to the hypogastrium, to the iliac regions or to the loins. In some patients this application acts like a charm, intense pain disappearing at once. In these cases cupping is preferable because more powerful, especially in cases of ovaritis or of peritoneal or peri-uterine inflammation.

But of all the modes of applying leeches the one I practise most frequently and successfully, especially in cases of persistent and long-standing congestion, chronic metritis, perimetritis, ovaritis, peri-uterine hæmatocele or pelvic inflammation, is that of *applying them to the cervix*. It is the best way of practising local depletion, or of determining a derivation by means of the uterus and the community of circulation existing between this organ, the Fallopian tubes and the ovaries. Whether known to Zacutus Lusitanus and Nigrisoli of Ferrara, or not, the application of leeches to the cervix in our days was introduced by Guilbert¹ and adopted by Scanzoni and Aran. During the many years that I have had recourse to this means it has invariably produced good results. Only the slight difficulties attending this little operation and the necessity of watching the results ought to prevent the physician from delegating it to others. However, with a little management on our part, this mode of applying leeches is not more disagreeable than any other. The patient is placed on the edge of the bed in the usual position for examination by speculum, the legs close together and flexed. After the cervix has been discovered and embraced by a long cylindrical speculum and the mucus carefully removed we put seven medium-sized leeches in the instrument (a larger number would not have room for sucking), directing them to the uterus, where they are kept in place by a large plug of cotton

¹ *Considérations pratiques sur certaines affections de l'uterus*. Paris, 1826.

wool, pushed into the speculum to prevent their escape. When that is done a table or high chair may be brought for the patient to rest her feet on, whilst she is entirely covered by her dress. The physician, however, must carefully hold the speculum pressed against the cervix, never letting it go for one moment, so as to prevent any of the leeches from insinuating themselves between this instrument and the vagina, and sucking the latter in place of the uterus, or escaping altogether, as I have often seen happen. I have never seen pain caused by the suction except when the cervix has been ulcerated or the os so open as to allow the entrance of the leeches, or when it is the seat of hyperæsthesia and neuralgia, which not only prevent the extremity of the sound from being introduced, but will not even permit of the uterus being touched by the finger (in these cases the pain caused by the leeches may be excruciating, leading to hysteria or fainting). This last case cannot always be foreseen, but in the first two cases it is easy to prevent pain by placing a little cotton wool in the half-open os, and by covering the ulcer with collodion.

The patient does not usually feel the leech-bites, but often experiences a peculiar sensation when they suck with most activity, or rather at the moment when, under the influence of suction, the blood flows towards the cervix and commences to flow. It is a sensation of dragging, of traction, which appears to be exercised from the hypogastrium, iliac region or kidneys towards the vagina; often the starting-point of this sensation of suction is in the diseased organ, the body of the uterus or the ovary, and specified exactly by patients. About twenty minutes afterwards, and most frequently after the patient has felt the peculiar sensation to which I have just referred, the blood is seen to ooze out round the cotton wool. This must then be removed and the speculum inclined downwards, so as to allow the clots of blood to escape; if we wait a quarter of an hour the leeches will follow. We must count them, so as to be sure that none have remained behind; if necessary we must search for them with the forceps at the bottom of the speculum, or after having withdrawn it we can discover them with the finger in some corner of the vagina and bring them out. The whole operation does not last more than half an hour.

If the leeches have taken well and the sanguineous flow be sufficient we shall see the cervix, which was swollen and dark red or purple, become pale and diminish in size; and the patient often at once experiences an agreeable sensation of depletion; sometimes she says that the leeches have taken away her malady.

The hæmorrhage generally lasts for some hours. The patient must, therefore, stay in bed; if the hæmorrhage is too great, a plug of cotton wool must be introduced into the vagina, which will moderate it by causing coagulation, and the patient should be advised to lie on her back, her legs together and flexed, and she should take some beef tea to keep up her strength. The physician ought not to leave her without being assured that the blood does not flow too abundantly. If the hæmorrhage is excessive, as is sometimes the case, we must have

recourse to vaginal injections of vinegar and cold water, and not leave the patient till the hæmorrhage is stopped. The surest way of doing so is to introduce the speculum again, to pour a little water into it so as to liquefy the blood, to remove the clots, find out from which point the hæmorrhage comes, to introduce a tampon saturated with a solution of perchloride of iron (1 in 30), and then plug. If, on the contrary, the bleeding is insufficient, leeches must be applied again the same evening or the next day, so as to obtain the requisite depletion.

Scarification of the cervix may also be employed. Scanzoni¹ and Mayer have had scarificators made for this purpose. The ordinary scarificator may be used, or a lancet may be employed by means of Savage's uterine forceps. The scarifications must not be made too deep for fear of wounding vessels of considerable size. But, as a rule, the hæmorrhage obtained from scarification is insufficient, and leeches have always seemed to me preferable. I make use of scarification when it is necessary to deplete a large cervix before cauterising it. The difficulty of obtaining a sufficient depletion by scarification of the cervix led to the invention of a cupping glass suitable for this organ, which induces a flow of blood from the little wounds made by the scarificator. Collin invented an instrument of this kind which he calls a *uterine leech*, and Simpson used a somewhat similar one.

I do not like to finish the history of bleeding without summing up in a few words the medications which it realises and the indications which it fulfils. In the first place it is evident that recourse ought not to be had to bleeding except when the blood plays an important part in the existence of a uterine disease, either in producing fluxions by the impulse given to it, or in congesting the organ by the distension of its vessels, or lastly, in helping to keep up inflammation. It is therefore evident that it can only be depletive, derivative, or revulsive. With reference to it, therefore, we must follow the rules laid down for the *Methodic treatment of fluxions*, and for the use of depletion, derivation, and revulsion in general. In this respect, what I have to say with regard to bleeding will be applicable to other evacuants, to other derivatives, to other revulsives.

We cannot do better than take the treatise of Barthez on the methodic treatment of fluxions² for a guide whenever we have to apply this great principle of general therapeutics to any special case. Now, fluxion may be imminent, or recent, or fixed. On the other hand, the inverse movements which we can produce on the blood, on fluxion, or on congestion, by means of bleeding, evacuants, blisters, attractives, hydropathy, &c., are depletion, which consists in directly subtracting from too full an organ, derivation, which consists in diverting in another direction, and before its arrival, the fluid which would otherwise have been carried to this organ where it would

¹ *Lehrbuch der Krankheiten der weiblichen sexual Organen*, dritte Auflage. Wien, 1863, p. 38.

² *Nouveaux Éléments de la science de l'homme*, 3^e édit., t. ii, p. 339. Paris, 1858.

have caused congestion, and revulsion, which turns aside the current of this fluid in order to direct it towards, and if necessary to fix it in another organ more or less distant, the organ which thus becomes itself the seat of the fluxion relieving the other which has kept

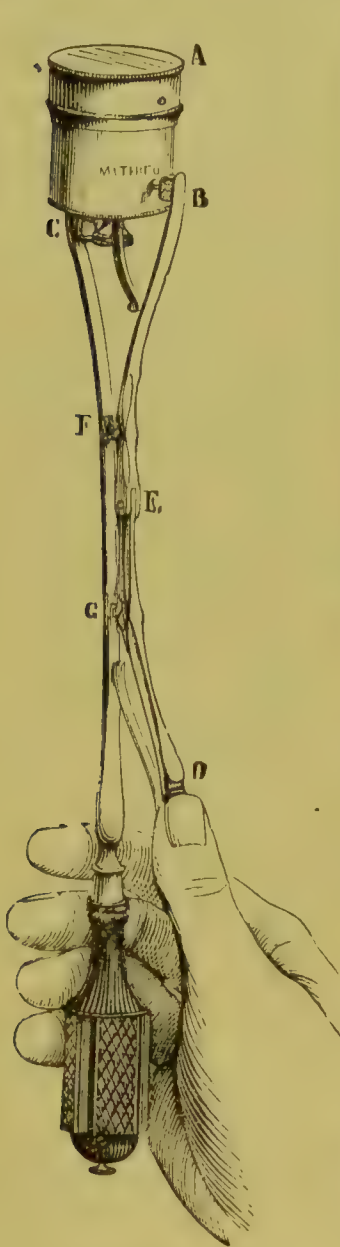


FIG. 138.



FIG. 139.



FIG. 140.

FIG. 138.—Mayer's scarificator for the cervix.

FIG. 139.—Cupping-glass with exhauster for the cervix.

FIG. 140.—Collin's uterine leech.

up the disease it is our business to cure. When fluxion is imminent, revulsion in turning the course to quite a different point may prevent its fixing itself on the organ which we wish to protect, *e.g.* bleeding from the arm, emetics, dry cupping of the breasts, sinapisms on

the arms in the case of imminent uterine fluxion, whether congestive or hæmorrhagic. When fluxion is fixed and has determined *recent* congestion of the organ, the current of blood may be diverted in another direction to a point more or less near the seat of congestion, *e. g.* by leeching or cupping the vulva, anus, groins, hypogastrium, loins, in case of recent uterine congestion following an excess of fluxion with insufficient menstrual hæmorrhage. When fluxion is fixed and of long standing, and cure difficult owing to habit and to the loss of reaction of the distended vessels, neither revulsion nor derivation are effectual. We must resort to evacuation or depletion in order to diminish the excess of vascular fulness, *e. g.* by leeching the cervix in congestion and chronic metritis. I omit details given by Barthez, and will also avoid going into them myself in the way of applying these fundamental principles to particular cases. But there is one point which this great physician seems to me to have neglected, and that is the necessity of associating revulsion or derivation with depletion in cases of chronic congestion, and associating them in an inverse order from that which we adopt when using them against imminent or recent fluxion. In short, depletion alone will not effect a cure; it will remove the excess of fulness, but not the habit of fluxion. The bad effect is only destroyed for the moment and will soon be reproduced, for the cause remains. We must not therefore be satisfied with having emptied the excess of fulness: we have not destroyed the fluxion, we have only mobilised it. We must quickly take advantage of this circumstance to divert it by derivation, directing it to another point by revulsion, doing it thoroughly and during a sufficient length of time for the uterus to lose the habit of being the seat of attraction to this fluxion.

In such cases we must almost always begin by leeching the cervix once or twice; but after the fluxion has been mobilised by this depletion, and if necessary by another as a derivative, or by the application of a blister to the neighbouring parts, we must take advantage of this mobility to uproot it, and by revulsion turn it aside in the direction of other organs. A purgative given the day after an application of leeches fulfils this indication perfectly in certain cases, and some patients from this moment are cured, or think themselves so; but in most cases the disease is of too long standing to be so quickly uprooted; the action must be kept up by cutaneous and intestinal revulsions of different kinds, especially by hydropathy, the best of all revulsives, not neglecting tonics, sedatives, &c., nor local applications, which are generally required to ensure success.

2. *Evacuants or purgatives.*—Purgatives are used with a twofold aim: as a cure for constipation or as a revulsive. It is absolutely essential to the success of treatment that constipation should be overcome. Neglect in this matter is followed by increased suffering, distension of the belly, hypogastric pain, dull aching in the back and at the anus, swelling of the epigastrium, headaches, &c. Regularity of the bowels is also necessary to keep up the appetite, prevent dyspepsia and increase nutrition; in fact, it is one of the most important

points in the treatment of uterine diseases. It is best to begin with simple enemata, cold rather than warm; if these are not sufficient medicinal enemata should be tried, laxative rather than purgative, a decoction of lettuce with four spoonfuls of olive or castor oil in an emulsion of yolk of egg, or the same quantity of honey, manna, treacle, or glycerine, in two or three glasses of water, with occasionally an infusion of half an ounce of senna in two pints of water, &c. &c.; if necessary three or four pints should be prescribed, the patient lying on her back and using a thick and very long gutta-percha tube. A long tube is of great service in allowing the enema to penetrate high up into the intestine, and enabling the patient to retain it for a long time. Sometimes the uterus or a peri-uterine tumour presses on the rectum and makes it as difficult for the enema to enter as for the fæces to be expelled. Enemata ought to determine a real evacuation of the bowels. To secure this the long gutta-percha tube ought to be used, and the enema should be laxative, cold or tepid, and copious. Attention must also be paid to diet, which should be partly composed of brown bread, milk, spinach, prunes, &c., and if necessary mild laxatives must be taken in addition, such as whey, vegetable broth, magnesia, alone or mixed with a little jalap or rhubarb, castor oil, &c. I often prescribe equal parts of rhubarb and magnesia (enough to cover a sixpenny-piece) in the first spoonful of soup, or a teaspoonful of castor oil in a cup of acorn coffee.

To determine revulsion these means are not enough; purgatives must be employed. I have already said that purgatives are generally indicated after leeching the cervix; mild laxatives, frequently repeated, are the best resolvents in chronic metritis and perimetritis. Drastics ought to be avoided; scammony, jalap, aloes, gamboge, which make up the pills so commonly used under the names of Anderson, Morrison, Frank, Bontius, &c., have the disadvantage of congesting the lower part of the intestine and the uterine system. It is only exceptionally and in very small doses that I allow their use, and then not as purgatives, but to prevent constipation. There is no danger in occasionally giving a little podophyllin or gr. $1\frac{1}{2}$ of aloes with gr. $\frac{3}{4}$ of rhubarb, so long as their use does not become habitual. But the best purgatives are oils, salts or tonics. Of oils, half an ounce of castor oil, alone or with the addition of one drop of croton oil, is quite sufficient, especially if the patient has taken a laxative enema the evening before. The salines most generally used are an ounce of Glauber's or Epsom salts, Seidlitz, Hunyadi Janos, and other natural purgative mineral waters. On account of the abundance of the serous excretions which they determine they cause a revulsion very favorable to the relief of the uterine system, and to the resolution of the diseased organ; it is a kind of white bleeding. If castor oil is counter-indicated by the coated tongue, and saline purgatives by atony with tendency to irritation, especially if there is a bilious condition which requires purgation as an evacuant as well as a revulsive, rhubarb, senna, and tonic purgatives generally may be resorted to. In such circumstances I am accustomed to give:—Infusion of coffee, one ounce; senna and rhubarb,

of each one sixth of an ounce; aniseed, fifteen grains in half a pint of water, adding two thirds of an ounce each of Epsom salts and manna. In obstinate constipation, kept up by a nervous condition (a kind of spasm of the intestine), and in the case of patients whose stomachs cannot tolerate the purgatives just referred to, belladonna pills are very successful (Sapon. Med., $\mathfrak{z}\frac{1}{3}$; Pulv. Bellad., gr. viii; Ext. Bellad., gr. viii. Misce; divide in pil. 50. Sig. one pill every night at bedtime). Sometimes gr. $\frac{1}{120}$ or gr. $\frac{1}{60}$ of strychnia may be added, or pills of sulphate of zinc. Lastly, on rare occasions emetics may be indicated, as a means of revulsion in fluxion or uterine hæmorrhage, or as a means of perturbation. In this case we may have recourse to antimony, in the dose of $\frac{3}{4}$ to $1\frac{1}{2}$ grains, or to ipecac., 15 grains, paying attention, of course, to the indications and counter-indications to the use of these medicines.

3. *Baths—Injections—Hydropathy—Mineral Waters.*—Under this heading I include the use of water in every form.

A.—*Hot or tepid baths* are usually bad in the treatment of chronic uterine diseases. They must not, however, be absolutely forbidden because they have been abused. In acute inflammation with nervous erethism of the uterus or neighbouring organs they soothe pain and act as a sedative in a remarkable way, especially if used long enough at a time, and rendered medicinal with bran, starch, hemlock, poppy-heads, belladonna, &c.; they should be taken hot, and vaginal irrigation should be made the whole time. They act as sedative fomentations, and in certain chronic diseases, such as cancer, they form with emollient plasters the only treatment possible.

General tepid baths, whilst soothing in acute disease, are weakening, therefore they cannot be continued for long. *Sitz-baths*, at a temperature beginning at 80° to 85° Fahr., and gradually lowered every day, are often very useful taken for fifteen or twenty minutes at a time. Cold baths are often more useful than hot. I do not mean baths of a very low temperature; but in the majority of uterine diseases it is well to take baths at a temperature below that of the body; the bath may be tepid when the patient enters it (if a reactive effect is not required), the temperature being gradually reduced till it is cool or even cold. I know nervous women who cannot take general baths except at a temperature of from 10° to 15° below that of the body, and who can remain for half an hour in the water. I speak especially with reference to sitz-baths; if hot sitz-baths are open to criticism, it is not the same with reference to cold ones, which ought almost always to be accompanied by vaginal irrigations.

B.—*Injections* are internal local baths. Few medicinal applications have varied as much as these in composition, form, and mode of administration. I think they may be turned to good account, but on condition that we understand the effects produced better than has hitherto been done. I will relate my experience on the subject. I distinguish three ways of *applying liquids to the vaginal cavity*: injection, lotion, irrigation.

a. *Injection* consists in the introduction of a liquid intended to

modify the vaginal mucous membrane in whole or in part, and in the prolonged contact (of varying duration) of this liquid with the parts on which it is to act.

When the physician wishes to obtain from an injection all that he is entitled to hope from it, he ought to make it himself. An ordinary syringe of medium size may be used if a straight uterine tube is affixed to it. The patient should be on her back in the position described for examination by speculum, care being taken that the pelvis be slightly raised. Another way is to use an ordinary syringe, introducing the tube into the vagina and holding it pressed against the vulva, adding cotton so as to close the vaginal orifice. A third way consists in using a gutta-percha syringe without a tube, the same size as the penis or larger; that is to say, exactly filling the vaginal orifice. The extremity should be rounded and pierced with holes; it should reach the further end of the vagina, but in proportion as the piston is pushed to expel the liquid, the syringe ought to be partially withdrawn to make room for the injection, which can be retained in the vaginal cavity as long as desirable by simply keeping the instrument in the entrance of the vagina so as to close it.

b. Lotion is really washing the vaginal mucous membrane by the repeated passing of a liquid over the whole extent of it. It is an excellent way of cleansing not only the vaginal walls but the cervix. It is generally, though incorrectly, called injection. Fortunately patients can generally make use of this means themselves. Of all the instruments for this purpose the one I prefer is the *hydroclyse*, because

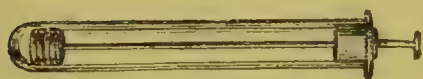


FIG. 141.

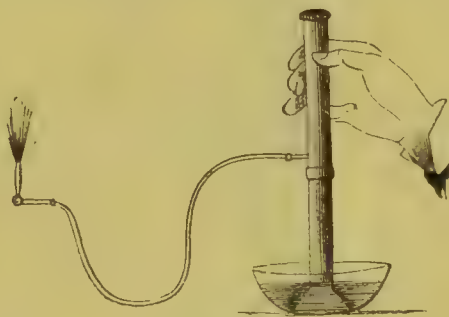


FIG. 142.

FIG. 141.—Ricord's vaginal injection syringe.

FIG. 142.—Hydroclyse or small pump, for vagino-uterine lotions.

it can be put in any recipient, can be used for almost any kind of liquid, and its mechanism is not easily put out of order. The patient being seated on a bidet in which is the liquid for the lotion, places the hydroclyse in the narrow part of the bidet, and slowly introduces the straight tube¹ well oiled, pushing it towards the back to the further extremity of the vagina; she then has only to pump for a few minutes

¹ It is very important for patients to use straight tubes of a large diameter, the advantages of which are detailed by Delioux de Savignac (*Bulletin de thérapeutique*, t. lxxxv, p. 159).

to secure that the whole of the liquid shall pass over the vagina several times. Most frequently after a lotion of simple water or soap and water, I order a medicinal one for ten or fifteen minutes, which then acts as a good injection. Lotions are indispensable in all diseases causing vaginal secretions; they often require to be made several times a day. The temperature is variable. In acute inflammation of the uterus or vagina, in cancer, and in certain cases of hyperæsthesia, the lotion ought to be tepid. In chronic inflammation, in leucorrhœa, engorgement, hypertrophy, deviation, &c., it ought to be cold. The nature of the injection also varies; the most generally useful are soap, carbolic acid, the alkaline carbonates, vinegar, alum, tannin, different preparations of iron, especially permanganate of iron, aluminate of iron, perchloride and peroxychloride of iron, &c. In using lotions the two following precepts ought to be attended to: 1. Only use detergents, astringents, cathartics; caustics ought only to be employed as injections or as direct applications. 2. See that the medicinal lotion is preceded by one of pure water, which will cleanse the mucous surfaces of the secretions which cover them.

c. Irrigation is nothing more than a prolonged lotion. It is an internal bath given to the vagina, the cervix, and organs contained in the pelvic cavity. Most frequently this internal bath may be given

simultaneously with a sitz or general bath; in this case the vaginal irrigator may be used, but the hydroclyse is better.

This irrigation may be prolonged indefinitely, but ought not to last less than from a quarter to half an hour, and it ought to be repeated twice; but I have often been obliged to continue it for several hours and to renew it after a short interval, in order that patients may derive the full benefit from a means the skilful use of which can produce most beneficial results. Such continuous irrigation, after cauterisation or any other traumatic lesion, is an excellent way



FIG. 143.—Vaginal irrigator.

of producing a sedative effect on the uterus and uterine system, and of preventing a fluxionary movement.

When the patient is confined to bed the *double vaginal irrigator* must be used. This ingenious apparatus allows of the cervix and vagina being kept constantly bathed for several hours by a liquid at a fixed temperature, without the bed or dress of the patient getting wet. The pipe which brings the liquid terminates in a tube which discharges it near the cervix. The pipe which carries the liquid away takes it up near the vulval orifice, letting it simply run into a bucket placed near

the bed. Both tubes open into the vagina, the orifice of which must be perfectly closed or the apparatus will not work. In Maissonneuve's instrument this is effected by the swelling of an air pessary. In Aran's it is managed simply by a metallic plate from the surface of which a metallic cone arises enclosing the two tubes.

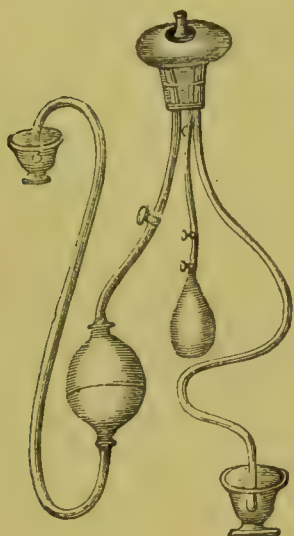


FIG. 144.

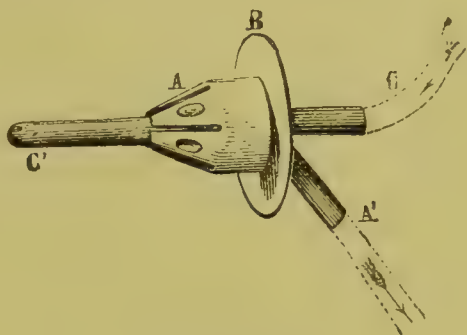


FIG. 145



FIG. 146.

FIG. 144.—Maissonneuve's double vaginal irrigator.

FIG. 145.—Vulvo-vaginal extremity of Aran's double irrigator.

FIG. 146.—Leroy's double canule pessary which can be used as a tube for the double vaginal irrigator.

c.—Hydropathy is one of the most powerful means in the treatment of uterine diseases. It comes to the aid of so many medications, sedation, tonification, revulsion, resolution, without enumerating others. Unfortunately it is often used blindly. Hot and tepid baths have been abused as well as bleeding, rest, &c. Probably it will be the same with cold water. By the side of patients who have been completely cured, are there not others who have been victims to hydropathy which has been made fashionable by empirical success and recommended too indiscriminately in the works of some skilful physicians? If we would enable hydropathy to render great services in the treatment of uterine diseases (and it can render great services), we must determine the nature of these services, at the same time pointing out the cases in which it may be injurious, for it is a two-edged instrument.

Cold water is efficacious in uterine diseases as in all chronic diseases, even in inflammations, but under certain conditions: for example, if acute attacks have ceased; if the hydropathy be employed according to the strength of the patient, according to her sensitiveness, and to that of her womb; if reaction be determined in different ways to suit different patients, by walking or other exercise, moist or dry heat, friction, &c., according to general strength and to the

special susceptibility of diseased organs, for sometimes the slightest exercise is followed by inflammatory attacks.

Physicians who are at the head of hydropathic establishments must always remember that cold water, like any other medicine, must be variously applied, the modes of reaction modified, and the whole system of treatment suited to the patient and to the disease. The chief aim of hydropathy is the cooling and the return of heat to the skin, the impression made on the organism and the reaction of the latter, concentration and expansion. *Cold water and hot air*: these are, according to Fleury,¹ the bases of hydropathy. These alternations of concentration and reaction are effected by means of cold water, *i.e.* by an agent which strengthens the economy without exciting it, and which acts on the organ which has the greatest extent of surface, *i.e.* the skin, at the same time that it stimulates the functional vitality and energy of all the viscera. The result is, that a frequently repeated natural revulsion is determined on the largest possible surface of the body; and that it has a *resolvent* action like everything which stimulates nutrition, repair and decomposition, absorption and excretion. This treatment is pre-eminently tonic for the diseased organ as well as for the whole economy, and constitutes a medication which Aran² has designated by the original expression of *remontement général*. Lastly, it may be made *sedative* in certain cases, by prolonging the impression of cold or moderating it so as to avoid reaction. Sometimes one or other of these effects is required from hydropathy, sometimes a combination of all. Generally it is employed to terminate a cure initiated by the use of other medicinal agents but which could not be effected by them alone.

There are cases in which artificial sweating has to be resorted to, when there is a difficulty of reaction in a patient, or when a powerful cutaneous revulsion is necessary. *Artificial sweating* may be determined by vapour baths, by dry heat, or by wet packs, during which the patient should drink an infusion of lime-tree flowers with a few drops of acetate of ammonia, and when sweating begins a glass of cold water every quarter of an hour. This sweating may either precede or follow refrigeration. This means has the drawback of weakening patients; but it is very powerful, and there are occasions when it is most beneficial. *The sudden impression of cold* may be produced by friction with a sponge soaked in cold water, a dripping sheet, wet compresses, cold enemata, affusions, immersion in a bath, in a river or in the sea; by sitz-baths (which may be of running water), rain baths, and douches of all kinds. The temperature of the latter ought to be from 45° to 50° Fahr.

The majority of these means can be employed at home under the direction of a physician. Great attention, however, must be paid in making applications. I am accustomed to begin by prescribing dry frictions: these frictions should be made morning and evening with a

¹ *Traité pratique et raisonné d'hydrothérapie*. Paris, 1^{re} édit., 1852; 2^e édit., 1857.

² *Op. cit.*, p. 261.

piece of flannel, a hair glove, or better still a brush soaked in camphorated ammonia, alcohol or tincture of bark. After a while this may be changed for cold sponging or the dripping sheet. A wet compress may be used also. This is soaked in cold water, then wrung out and wound round the pelvis with dry flannel and oil silk over it; this is worn for eight or twelve hours without being changed. They are very sedative, but should only be used in summer. Enemata of cold water taken at bedtime and retained all night are also very sedative and refreshing. By-and-by cold sitz-baths may be taken. They are either merely revulsive or they become sedative according to their duration. The temperature must not be too low, especially if they are of running water, and care must be taken to effect a good reaction.

The most beneficial applications, however, are *cold affusions and douches*; in them refrigeration is combined with titillation or more or less energetic percussion by means of which reaction is more certainly produced. The douche may be given at home with a common garden hose, or better still with a pump having an air reservoir like those of Charrière or Mathieu, in which the force of projection exercises a more efficient percussion. These douches ought to be general; seldom local, on the sides, loins or hypogastrium; *never on the cervix nor into the vagina*. A single jet may be used, or it may be broken by a rose. The latter is preferable as a rule. Patients ought to breathe freely while being douched. In order to secure this, care should be taken after having struck the feet with the column of water, to make it mount upwards by the legs, pelvis and loins, where it should be kept for a few seconds, then to diverge obliquely to the shoulders, first to one side, then to the other, without striking the spine, which always causes a feeling of suffocation. The patient ought to move and rub herself under the douche in order to facilitate the return of heat. It is enough to have the douche once a day on rising, or during the day three or four hours after a meal. It ought not to last more than a minute at first; but may by degrees be prolonged to five minutes. In order to make it effective, we must commence by determining heat to the skin, by means of friction, sweating, or best of all by walking or other exercise; this is what is called action. When the body is well warmed the patient gets her douche. Immediately afterwards she is dried, rubbed, and then she walks again till she perspires; this is what is called reaction.

In hydropathic establishments there is the advantage of having very strong douches, of being able to have two daily and to multiply the means of action and reaction; in short, of employing the whole day in treatment of some kind. The continued regularity of the treatment under a good doctor greatly hastens the resolvent effects of hydropathy. Hot and cold douches may also be given alternately, and often produce great effect. In many establishments treatment is not even interrupted at the monthly periods, but it is more prudent to do so for at least two or three days, and especially to discontinue cold sitz-baths. Aran mentions a case in which serious accidents occurred

because this precaution was not taken. Before terminating, let me repeat once more that hydropathy ought never to be employed in cases of acute disease, nor even in chronic diseases which preserve an acute character, nor in which inflammatory attacks are liable to occur; these must be subdued by antiphlogistics, blood-letting, rest, general baths, purgatives, &c. In short, we must not expect the impossible from hydropathy, but it can do much; indeed, without it I think it would be difficult to effect a cure in the majority of uterine diseases.

D. *Mineral Waters and Medicinal Baths*—Mineral waters in baths, irrigations, douches, as well as artificial mineral or medicinal baths, produce excellent effects if applied opportunely and according to the indication. We must remember that mineral waters vary greatly in character; some are resolvent, such as the alkaline waters of Vichy, Andabre, Vals, Boulou; others are revulsive and slightly stimulating, *e.g.* the sulphur waters of Luchon, Saint Sauveur, Cauterets, Vernet; others tonic and more or less stimulating, *e.g.* the iron waters of Lamalou, Sylvanès, the saline waters of Balaruc, sea-bathing, the Bourbonne waters, &c.); lastly, some are sedative (Bigorre, Ussat, Nérès, &c.).

We must remember that these waters, besides possessing the properties just enumerated, have a specificity (if I may use the expression) which makes them valuable in diathetic affections, impoverishment of blood, dyspepsia, and all the general conditions on which uterine disease is often dependent. We must be guided by these two principles in choosing a watering place for our patients, remembering that mineral waters may be even more prejudicial than hydropathy if employed prematurely before acute symptoms are extinct.

Sea-bathing produces very different effects according to the length of the bath, the climate in which it is taken, the season of the year, and the temperament of the patient. It may be tonic and stimulating, or it may exercise a very energetic resolvent action on a scrofulous affection, or on swellings dependent thereon. An intense or prolonged chill is to be avoided in women exhausted by a long uterine disease, as well as in persons whose power of reaction is weak; hence the inestimable value of the Mediterranean for delicate and enfeebled constitutions. The body hardly cools in the water, and reaction is quick on coming out of the sea into an atmosphere warmed by the rays of a burning sun. The burning sand is also of great value in bringing back heat to the extremities. The Atlantic is for the strong who can support the cold, it gives them renewed strength; the Mediterranean is for the weak and chilly, for the lymphatic, for those who have neither strength nor heat to lose.¹

The waters of Balaruc, Bourbonne, and other saline springs possess the same qualities; they are purgative, they are also very efficacious in the treatment of paralysis, especially of essential paralysis, as well as of nervous hysterical paralysis. I have seen a case of paraplegia of

¹ Donné, *op. cit.*, p. 317. Paris, 1864.

this kind in a young lady, which had lasted for two years, depriving the legs, bladder and rectum of all power of contraction, completely cured by the Balaruc waters. As a rule, however, saline waters are too exciting, and therefore contra-indicated in the treatment of uterine diseases.

On the other hand, we have the sedative waters of Bigorre, Assat and Nérès, which have a great reputation, and to which some physicians send all their patients indiscriminately. They are absolutely inert in the majority of uterine diseases, but they have a sedative effect similar to that produced by a series of tepid baths of ordinary water.

The alkaline waters of Vichy, Vals, Boulou, Andabre, Plombières, are perhaps those which produce the most satisfactory results. They owe their success to the influence they have on digestive troubles and to the resolvent action which they exercise on engorgements. I have had some remarkable instances of success, especially in associating them with hydropathy. Villemin¹ has wisely pointed out that their use is absolutely contra-indicated where inflammatory symptoms exist.

The iron waters of Lamalou, Sylvanès, Schwalbach, Bussang, Oreza, &c., are often of great service also in curing chloro-anæmia and dyspepsia; they enrich the blood and strengthen the constitution, but sometimes have the drawback of being too exciting. The considerable amount of carbonic acid contained in the Lamalou waters determines a temporary hyperæsthesia of the skin, which is afterwards followed by the revulsive effect produced by the absorption of carbonic acid, *i. e.* a marked sedation of the nervous system.

Lastly, the sulphur waters of Luchon, Saint Sauveur, Cauterets, and especially Vernet, are indicated in women who are lymphatic, scrofulous, leucorrhœic and affected by catarrh or rheumatism. In addition to the sedative effects of some springs and the stimulating effects of the great majority, they have a revulsive and resolvent action, by which remarkable results are produced in a great number of patients, as I can testify. Vernet is especially to be recommended; it is habitable all the year, and hydropathy may be combined with the use of the springs, which vary greatly in temperature and composition.

Medicinal baths are often useful in acute uterine diseases, or in very painful chronic diseases, such as cancer, or in cases of great debility associated with the lymphatic temperament. They are generally composed of narcotic or sedative plants—poppy-heads, hemlock, belladonna, henbane, aconite; or of emollient substances—linseed, bran, glue, mallow; or infusions of aromatic plants—lime-tree flowers, orange leaves, thyme, lavender, rosemary, sage.

An aromatic bath is prepared by pouring boiling water over two handfuls of aromatic herbs and covering the bath with a blanket, the patient waiting till the temperature is sufficiently low to allow of her taking the bath comfortably. When aromatic herbs cannot be had

¹ *De l'emploi des eaux de Vichy dans les affections chroniques de l'utérus*, pp. 126, 244. Paris, 1857.

they may be replaced by the preparation of Pennès. For emollient baths, from 4 to 16 ozs. of glue or starch is dissolved in water, or a canvas bag containing 2 lbs. of bran is put in the bath, or a decoction of mallow or linseed. For sedative baths a decoction made from 1 oz. of the leaves of narcotic plants and poppy-heads mixed together may be poured into the bath. For a sitz-bath with irrigation one half or one third of the quantity required for a general bath is sufficient.

Mineral baths may be prepared in many ways. I think the simplest are the best:—1 or 2 lbs. of common kitchen salt for saline baths; as much black soap or from 7 to 10 oz. of carbonate of soda for alkaline baths; from 2 to 4 oz. of sulphide of potassium, previously dissolved in water, for sulphur baths. As for chalybeate baths, I think Lambossy's recipe is the best:—Take five or six quart bottles filled with vinegar, add three or four handfuls of iron filings to each; leave them open and exposed to the air; when the liquor has the taste of ink it is ready for use. One bottle is enough for a bath. The iron is left at the bottom of the bottle, which can be refilled with vinegar. The same water may serve for several baths if an additional half bottleful is used each time.

4. *Resolvents*, including all the agents used in the same medication, solvents, alteratives, and special stimulants, such as electricity, are often indicated after antiphlogistics and bloodletting, and simultaneously with purgatives, baths, hydropathy or mineral waters. Dry rubbing or with hartshorn, alcohol, bark or benzoin, hydropathy and purgatives, are all powerful resolvents when wisely used, but not sufficient of themselves to dissipate engorgement, hypertrophy, or the remains of products of inflammation, especially when these morbid states are kept up by the existence of a diathesis. In these cases we must have recourse to resolvents, properly so called, and to anti-diatheitics.

One of the most powerful resolvents that can be used on account of its antiphlogistic character is mercury; it diminishes the plasticity of the blood, increases the absorbing power of the lymphatic vessels and stimulates reabsorption. I generally prescribe it on the abdomen and groins. I add to the unguentum hydrarg. one tenth of its weight of extract of belladonna, an excellent sedative. In acute disease the application is repeated every six hours, placing over it a large, hot and very moist cataplasm. Another mode of application is to spread a thick layer of this ointment on a piece of linen large enough to cover the whole abdomen, and leave it there for three or four days, taking care to cover it with a sheet of cotton wool and oil silk which keeps the skin moist and conduces to the absorption of the ointment as well as to the subduing of the inflammation; the whole should be kept in place by a bandage, or, better still, by a pair of knitted swimming drawers.

R. Ung. Hydrarg.
 Ung. Simplic., $\text{āā } \frac{3}{4}$;
 Tinct. Opii, ℥v to x ;
 Ext. Bellad., gr. $\frac{1}{4}$ to gr. $\frac{3}{4}$.

When the use of mercurial frictions is prolonged care must be taken to prevent salivation by occasionally giving a glass of Seidlitz or Pullna water and telling the patient to be particular to wash the mouth

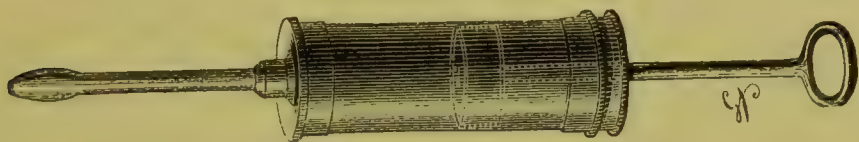


FIG. 147.—Instrument for injecting ointment into the rectum.

frequently, adding a little carbolic acid, tincture of bark or guaiacum to the water. She should also use a solution of chlorate of potash as a gargle. One of the best preparations when mercury has to be given internally is a pill containing $\frac{3}{4}$ of a grain each of calomel, extract of hemlock, extract of dulcamara and white soap; one to four daily.

In diseases, however, which have become chronic, iodine and its compounds are more frequently useful. Iodide of potassium taken internally has a very powerful resolvent action. It is well to begin with $1\frac{1}{2}$ grains daily, which may be gradually increased to 45 grains, and then diminished, the whole treatment lasting for about three months. Sometimes it is better to give this medicine as an enema:—From 3 to 30 grains of iodide of potassium with a few drops of laudanum or a little belladonna or chloral in from 1 to 3 ozs. of water. Simpson¹ used to prefer the bromide to the iodide because he considered it a sedative and tonic as well as a resolvent. The sedative properties of this salt have induced all practitioners to adopt it.² I do not speak of the other preparations of iodine, such as the tincture, the iodide of iron, &c., which are less frequently used in these cases, but which sometimes render great service, provided they are not contra-indicated by the state of the digestive organs. As to the external use of this drug, I sometimes paint different parts of the hypogastrium and even the vagina and cervix with tincture of iodine, which acts as a revulsive as well as a resolvent. Sometimes I prescribe frictions, to be made in the evening, with an ointment composed of

R. Ung. Simp., $\bar{3}j\frac{1}{4}$;
Plumb. Iodid., gr. xlvj;
Pot. Iodid., gr. xxx,

or it may be applied in the same way as the mercurial ointment.

Preparations of gold are very useful when mercury and iodine are contra-indicated. They are especially useful in cases of scrofulous diathesis. I have used them with great success for several years; under their influence I have seen three ovarian cysts disappear, and the development of two others arrested. Chloride of gold and sodium

¹ *Clinical Lectures on the Diseases of Women*. London, 1872, p. 385.

² Gübler, *De la puissance sédative du bromure de potassium*, dans le *Bulletin général de thérapeutique*, t. lxvii, pp. 5, 49. Paris, 1861.

is given by rubbing it into the tongue, beginning with gr. $\frac{1}{45}$, and gradually increasing the dose by an additional gr. $\frac{1}{50}$ every ten days till gr. $\frac{1}{10}$ is taken; or it may be given in solution or in pills from gr. $\frac{1}{50}$ to gr. $\frac{3}{4}$ daily.

I have also found arsenic of great benefit when the uterine disease seemed to be under the influence of a herpetic diathesis. It improves the condition of the blood and stimulates nutrition. I generally prescribe a solution of gr. $\frac{3}{4}$ of arseniate of sodium in 7 oz. of water, a tablespoonful twice a day. The dose may be increased by adding gr. $\frac{3}{4}$ every week till $4\frac{1}{2}$ grains are taken in the week.

Alkaline or sulphur waters, tincture of colchicum, and Bonjean's dialysed preparations ought not to be neglected in cases of rheumatic or gouty tendency; but the indication for the two latter drugs is much less frequent than for the others.

Electricity may become a powerful resolvent by the special excitement produced in the uterine tissue.

I must also mention ergot of rye, which may act, though in an indirect way, as a powerful resolvent on this organ. It causes contractions of the muscular tissue of the uterus. Owing to its special action on the uterus, as well as to its hæmostatic properties, it not only arrests hæmorrhage, but it determines a continuous contraction of the organ, which is transformed into an expulsive effort when a polypus or other foreign body is contained in it, and into a resolvent action when this contraction operates on the organ itself, on the liquids which engorge it, or on the plastic elements interposed in its tissue, and which increase its size and density. Ergotine may be used or ergot of rye in powder in the same way as to induce delivery, but in smaller doses, $3\frac{1}{2}$ to 7 grs. every day.

Lisfranc, Nonat, and others recommend abstinence or the gradual diminution of food (the Arabic treatment), as stimulating the absorption of plastic products and promoting resolution. Nothing is more logical, and I admit that there are cases where this treatment should be resorted to. But these cases are very rare. The *cura famis* requires very great prudence on the part of the physician for two reasons: the first is, that impoverishment of blood and debility of constitution generally accompany chronic disease; the second is, that whilst it is true that the resolution of chronic phlegmasia is promoted in proportion as the patient is weakened, we are also assisting the diathesis to profit by the daily increasing debility of constitution to make fresh inroads on the organism.

5. *Tonics and restoratives* are, on the contrary, absolutely indicated in the majority of cases. We can even obtain from them some of the beneficial effects of the *cura famis*, such as the diminution of the unhealthy stoutness of some patients, at the same time that we improve the condition of the blood and fibre, the tone of the muscles, the strength and resistance of all the organs. A generous diet is the best tonic; abstinence from farinaceous food and from milk, and almost from bread, the constant use of roast meat with green vegetables and fruit, associated with vapour baths, frictions, hydropathy, exercise and

alteratives will strengthen the constitution as well as determine the resolution of hypertrophy or tumours formed by the plastic products of chronic phlegmasia. In order to derive the full benefit of a generous diet we must, as a rule, stimulate digestion and also give medicines of a tonic character or which act on the blood, such as the chalybeates. When digestion cannot be stimulated by a change to the country or sea-side, by the action of mineral waters and hydropathy, we must have recourse to anti-dyspeptic medicines. When the principal agent of digestion is wanting, we must resort to pepsine, alone or associated with diastase, lactate of soda (3 grains of each), morphia, strychnia and bismuth taken immediately after meals, as recommended by Corvisart.¹ When the secretion of the gastric juice requires to be stimulated we should give a bitter or aromatic infusion, a little ice or alkalines ten minutes before meals, as advised by Blondlot,² Corvisart,³ and Longet.⁴ The preparations which I have seen most successful in this case are the following:—A wineglassful of Vichy water (Source de l'Hôpital), or a pinch of bicarbonate of soda in a little water, a cupful of infusion of quassia, alone or with a little rhubarb, or a teaspoonful of absinth liqueur; they should be taken ten minutes before meals, and be varied from time to time. At other times I give one or two of Gallard's pills⁵ during meals. When there is nausea with tendency to vomiting, natural or artificial effervescing drinks should be taken at meal times—seltzer water or St. Galmier, Condillac, Vergèze, or Lamalou water, &c.; or the following powder may be prescribed in a little orange-flower water:—Calumba root and calcium carb., each gr. $3\frac{3}{4}$, with belladonna, gr. $\frac{3}{10}$. If one dose is insufficient a second and a third may be taken at two hours' interval. If the tone and reaction of the stomach are defective, an infusion of bark mixed with wine should be drunk at meals, or tar water, or the alkaline chalybeate waters of Lamalou, Boulou, Vals, Vichy (Celestin), Andabre, Bussang, Orezza, &c.; or sometimes even cold sulphur waters, or artificial preparations, simple iron water, carbonate of iron, or the peroxychloride of iron. When there is habitual diarrhoea, Vichy water should be taken before meals, and a large compress of flannel and oil silk should be worn over the abdomen, or the abdomen may be rubbed with croton oil. Small enemata, with a few drops of laudanum, are sometimes useful, or chalk mixture, bismuth, &c. Lastly, morphia in solution

¹ *Sur la dyspepsie et la consommation et sur l'usage de la pepsine.* Paris, 1854. See also O. Reveil, *Formulaire raisonné des médicaments nouveaux et des médications nouvelles*, p. 92. Paris, 1864.

² *Traité analytique de la digestion.* Paris, 1843.

³ *De la sécrétion du suc gastrique sous l'influence directe des aliments, des boissons et des médicaments.* Paris, 1857.

⁴ *Traité de physiologie*, t. i, p. 184. Paris, 1861.

℞ Piperis,
Pulv. Myristic., āā gr. xv;
Pulv. Cinnamon,
Pulv. Caryophylli, āā gr. xxx;
Assafœtid., gr. lx;
Ext. Tarax, q. s.

Misce, divide in pil. 50, silver. Sig. 1 or 2 at meal times.

($\frac{3}{4}$ of a grain in 30 minims of laurel water), or laudanum, or tincture of nux vomica, either of which may be taken in doses of from 1 to 6 drops, may be of great use in calming pain or exciting contractions when pain or inertia of the stomach are the causes of dyspepsia.

As for tonics properly so called, in cases of chloro-anæmia we must have recourse to one of the numerous preparations of iron. One of those I use most frequently is a modification of Blaud's pills made by my father: R. Mass. Pil. Blaud, gr. $\text{ij}\frac{1}{4}$; Pulv. Rhei, gr. $\frac{3}{4}$. M. Ft. pil. 1 to 4 before each meal. This preparation of iron is soluble, and the rhubarb prevents constipation. I often add valerian to the pills. When we wish to associate a fattening ingredient with the iron, cod-liver oil mixed with syrup of iodide of iron should be ordered.

Lastly, the various preparations of bark, alone or mixed with milk, are excellent tonics and restoratives.

6. The importance of *sedatives* cannot be overrated with regard to the various indications which they fulfil in the treatment of uterine diseases. The element of *pain* is the one we have most frequently to fight against, especially when localised in the uterus or in some nerve. Local or general hyperæsthesia, neuralgia of the uterus or of one of the sensitive nerves, *e.g.* the sciatic nerves, the ilio-pubic, an intercostal, or a branch of the trifacial, are the most frequent manifestations of pain; they indicate the use of anæsthetics and anodynes. The preparations of opium are the best narcotics; they may be associated with belladonna and given in various forms. In metritis itself, when an element of excessive pain is added to the inflammation, opium should be given internally, $\frac{1}{7}$ of a grain every four hours or every hour if necessary, or $\frac{1}{15}$ of a grain of hydrochlorate of morphia every six hours till the pain ceases. Narcotics may be also administered in an enema or bath. I prefer giving 15 or 30 drops of laudanum by the rectum in an ounce of water to making a uterine application; or the groins may be rubbed with laudanum, or a suppository of opium and belladonna may be introduced by the anus, or, better still, a sedative pomade may be injected by means of the rectal syringe (fig. 147, p. 185). Sitz-baths are often of great use, made of a decoction of 60 grains each of henbane and belladonna leaves to 10 quarts of water. Sometimes a cold sitz-bath with irrigation for several hours is sufficient to cause the cessation of this excessive hyperæsthesia, especially when brought on by traumatism. Various sedatives may be applied to the cervix itself, belladonna, laudanum, &c. As to the application of cold, chloroform, and carbonic acid, it is better to apply them to the hypogastrium than to the cervix; the first is followed by a painful reaction and the two others induce congestion.

Subcutaneous injections of atropine, or hydrochlorate of morphia, or even of chloroform, succeed wonderfully in neuralgia,¹ and I always advise their use if anodyne frictions have no effect. I know a lady who has given herself some hundreds in the iliac and crural regions to

¹ *Des injections narcotiques sous-cutanées dans le traitement des névralgies. Montpellier médical*, t. iii, p. 289, 1859.

soothe the excruciating pain caused by compression of the crural nerve by a fibroma of the broad ligament. They can be made in the hypogastrium, in the sides, thighs, &c.; I do not think there is any advantage in making them into the uterus. If the liquid is injected into the uterine cavity, how can the dose be measured? how can we know that a single drop will be absorbed? If it is injected into the tissue itself the puncture causes a little hæmorrhage, which carries away a part of the solution with the blood. I confess that though I have been in the habit of performing this little operation, I have never been satisfied with the way in which it was done nor with its results.

The other element depending on the nervous system is *spasm*; it necessitates the administration of antispasmodics under all forms. Sometimes the spasm is confined specially to the uterus under the form of cramp; sometimes it is general, and may even give rise to hysterical attacks. Laudanum given in an enema is often sufficient to alleviate these colics. Cold water in many circumstances acts as an antispasmodic. Infusions of lime tree flowers, orange leaves, balm, &c. are also useful; but when there is constriction of the throat, nausea, convulsive or tetanic movements, anæsthesia, &c., we must employ stronger remedies. Inhalations of ether or chloroform often succeed; or these medicines may be administered by the mouth in the form of capsules; when these remedies are not sufficient, ammonia, camphor, galbanum, ambergris, valerian, musk, or castoreum may be tried. Ambergris and musk are so costly that I generally use valerian and castoreum associated with laudanum and sulphuric ether; I mix these four substances in equal parts, and prescribe 15 to 30 drops in half a tumbler of water with a spoonful of orange flower water, to be taken in spoonfuls every five minutes. These *antispasmodic drops* generally give immediate relief, and it is a convenient preparation for patients to have beside them. When, however, the symptoms assume a still more serious aspect, assafœtida should be given in pills or in an enema (assafœtida gr. lx, tr. opii min. xv, mixed with the yolk of an egg in 3 oz. of water), and sinapisms applied to the extremities, the pulmonary, epigastric, and cardiac regions. The use of electricity under the form of the continued current may also render great service in the treatment of uterine pain and spasm.

7. *Epispastics* and *exutories* may be employed, especially in the treatment of chronic diseases. They act as derivatives rather than as revulsives, for example in mucous discharges; and sometimes as resolvents, for example in the treatment of engorgements and chronic peri-uterine phlegmasia. Exutories may be used in cases of diathesis, but I confess I dislike this mode of treatment, especially for young women, and prefer revulsion towards the skin by means of hydropathy, not only because it is less repugnant, but because it is much more natural, being exercised on a large surface, and consequently more efficient and energetic than the best exutories. I reserve them for serious cases, where complications such as phthisis prevent the use of hydropathy.

Epispastics properly so called (blisters) have a double action, being derivative as well as resolvent when applied near the seat of evil. In cases of chronic metritis, peri-uterine inflammation, ovaritis, engorgement, hypertrophy, they should be applied to the loins and even to the sacral region, to the abdomen, hypogastrium, or one or other of the iliac regions; they ought to be proportioned to the extent and duration of the inflammation. For an extensive but recent inflammation, pelvic peritonitis for example, a large blister is applied, covering the greater part of the abdomen or one of the iliac regions; it should be left for about twenty-four hours till the blister is well formed. It is then gently punctured with a needle to allow the escape of the serous fluid, care being taken not to remove the skin; it is then covered with cotton wool which is kept in place by a tight bandage to prevent friction. For a long standing but circumscribed inflammation or for an engorgement or hypertrophy it is better to apply a number of small blisters (the size of a crown piece) successively; the first in the centre, the others round about it.

Blisters may also be applied to the cervix. I have seen them cure obstinate leucorrhœa. They are also useful in cases of perimetritis, and in all those cases where it is desirable to relieve the uterus by means of a serous discharge, or to produce a rapid and temporary vicarious action. These applications are made as follows: after removing all mucus from the uterus, a blister rather smaller than the cervix is applied to it, and kept in place by pledgets of cotton wool; after inserting a number of small ones a large one ought to be introduced. These precautions are absolutely necessary to prevent the blister from touching the vagina which would cause intense pain. After remaining for a few hours or a day it should be withdrawn, when a very abundant serous secretion takes place which generally lasts for a few days. It is useless to apply any dressing, but emollient irrigations should be made morning and evening.

2. *Local means*

Local or topical means are of three kinds: mechanical appliances, medicated applications and surgical operations.

1. The *mechanical means applied externally* are: various kinds of abdominal belts and perineal pads. The former act on the abdominal viscera, the latter on the uterus. We must distinguish between two kinds of *belts*: abdominal belts, the object of which is simply to support or compress methodically; and hypogastric belts, which only act on the viscera in the way of supporting them so as to protect the uterus indirectly.

Abdominal belts may act either on the whole of the abdominal walls or on its lower part. The object of the former is to compress the abdomen methodically when too much distended by adipose tissue, when the size of the belly becomes troublesome, or when the parietes (enfeebled by distension caused by previous pregnancies or ascites) are relaxed, hanging down over the pubis, and requiring to be supported in order not to hinder exercise and cause fatigue. This methodic

compression may be exercised with advantage on distension produced by ovarian cysts during their development, after evacuation of the fluid by puncture, or even after the removal of the cyst. I have seen such striking examples of the efficiency of abdominal belts, that I

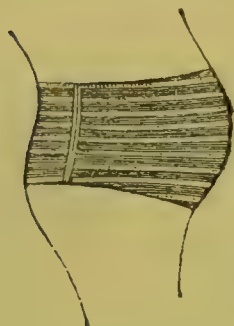


FIG. 148.—Bourjeaurd's abdominal belt or support.

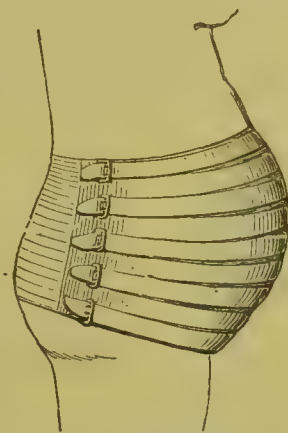


FIG. 149.—Courty's belt for methodic compression.

cannot but recommend their use. The introduction of india rubber into the materials used for this compression allows of a great degree of precision being attained in the application of these belts, and at the same time renders them impermeable, which makes them of great service when it is desirable to maintain a moist heat round the pelvis. In this respect I cannot too highly recommend Bourjeaurd's *elastic belts*.¹ The difficulty of exercising a sustained and regular compression when the abdomen presents inequalities or contains an irregular tumour, or during the evacuation by paracentesis of the fluid of an ovarian cyst or of ascites, led me long ago to invent a *belt exercising methodic compression*. It is simply composed of a dozen little straps of girth webbing alternating with a dozen little buckles, both being fastened to a single piece of strong ticking which forms the lumbosacral part of the belt. In buckling the straps alternately right and left, beginning either from above or below and increasing the constriction proportionally, the whole of the antero-lateral abdominal parietes are compressed in the most regular manner. In paracentesis this belt obviates the necessity of having assistants.

Hypogastric belts, as their name indicates, concentrate their action on the hypogastrium. Their essential part consists of a strong pad, very thick, sometimes elastic, but more frequently not, hard, resistant, stuffed with horsehair, lined with strong chamois leather on the hypogastric side, and supported by a broad metallic plate outside. These are not intended to compress the uterus in any way, still less to render it fixed, but only to raise and support the abdominal viscera, in order to prevent them from weighing painfully on the diseased womb. These belts ought to have the opposite effect from the corset. The corset pushes all downwards; hypogastric belts ought to raise all up-

¹ *Gazette des hôpitaux*, 24 janvier, 1857.

wards; hence the uterus is protected. The principal part of the apparatus therefore is an elastic pad, or a plate supporting a strong pad of horsehair, to which a key has been adapted which allows of variation in the slope. As for the way in which the pad is maintained in place, sometimes a broad band is used, like the soft belt for supporting the hypogastrium in pregnancy; or a stronger band, like that used in the bandage for hernia (Raynal's system). Sometimes

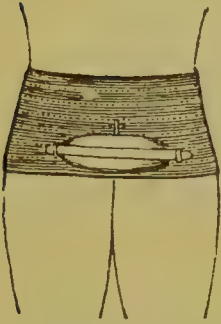


FIG. 150.—Bourjeaud's hypogastric belt.

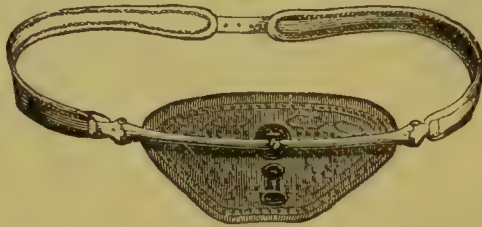


FIG. 151.—Hypogastric belt with springs and articulations, and pad with key.

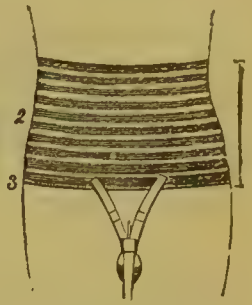


FIG. 152.—Bourjeaud's belt for anal or uterine prolapsus, with perineal pad.

elastic springs are used, having their *point d'appui* behind on the sacrum, which by means of double articulation allow movements in all directions without displacing the pad (Charrière's and Mathieu's belts are like these). Whichever belt is applied, the band or springs ought always to pass under the crest of the ilium. In cases where median compression would be painful for bladder or uterus, it is replaced by bilateral compression, exercised by means of two pads on the right and left of the *linea alba*, leaving a little space between them.

The *perineal pad* acts on the uterus, but it acts externally, not internally like pessaries, and in that respect is often superior to them because better borne. It is indicated in cases of prolapsus, and even in cases of hypertrophic elongation of the cervix. It consists of a large pad of hair, india-rubber, gutta percha, or even wood, pressed against the perinæum by means of straps fastened to a good belt. Sometimes the pressure that is necessarily exercised causes a dragging on the thighs, which would let the belt slip if not kept in place by shoulder-braces like Demarquay's.¹

It has been proposed to introduce mechanical supports into the *rectum*, with the view of removing uterine retroversion by distending the rectum with one of Gariel's pessaries.² It is introduced into the intestine in a flaccid state, and then distended with air by means of a syringe, or pledgets of lint may be introduced of a gradually increased size.³ Every one, however, must foresee that these means must be very

¹ *Gazette des hôpitaux*, 1860.

² Favrot, *Revue médico-chirurgicale*, novembre, 1851.

³ Huguier, *De l'Hystérométrie*, p. 338. Paris, 1865.

troublesome, causing a constant desire to go to stool, irritating the intestine, and tending to produce tenesmus.



FIG. 153.—Velpeau's pessary, having the form of the vagina.



FIG. 154.—Sponge filling the vagina and serving as pessary.

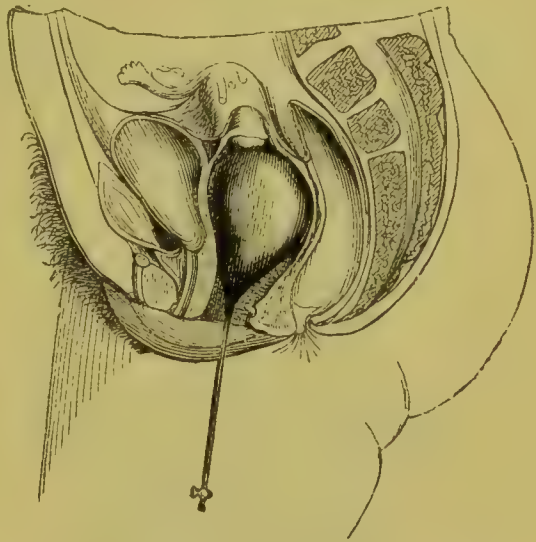


FIG. 155.—Gariel's globe air pessary filling the vagina.

2. *Internal mechanical supports* are known as *Vaginal pessaries*; they are very numerous, but in this case we may say, as in that of every other therapeutical problem which is apparently distinguished by the variety of ways in which it can be solved, that this seeming wealth only conceals real poverty. They may be distinguished according to the parts which they support and those which they take for their *point d'appui*. Some support the uterus by filling the vagina and taking its shape, like Récamier's emollient or aromatic bags, or the pessaries of Velpeau or Cloquet; others distend the vagina in every direction like the globe pessaries (of wood, ivory, or metal), or fine sponge (fig. 154), which is the simplest of all pessaries, in spite of the drawbacks pointed out by Lisfranc, or like Gariel's air pessary (fig. 155), which is very easily introduced when empty (fig. 156) and which can be afterwards inflated (fig. 157).

Others, in place of taking the shape of the vagina or distending it in every direction, only distend it in one zone, exercising excentric pressure on its walls in a circular manner, the edge of the inferior strait

serving as a *point d'appui*, which allows the uterus to rest on this artificial floor (Figs. 158, 159, 160). They are supported by the bones of the pelvis. These ring pessaries are either made of hard substances,



FIG. 156.—Gariel's globe pessary empty.



FIG. 157.—Gariel's globe pessary distended with air.

such as wood, metal, or vulcanite, or of india rubber distended by air (Figs. 162, 163, 164). They are generally perforated in the centre to



FIG. 158.

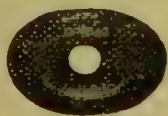


FIG. 159.

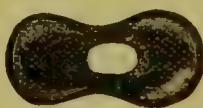


FIG. 160.



FIG. 161.

FIG. 158.—Circular ring pessary.

FIG. 159.—Elliptical ring pessary.

FIG. 160.—Pessary in form of figure of 8.

FIG. 161.—Funnel-shaped pessary, hollowed out in front and applied in cases of retroversion.

allow the uterine secretions to escape. These pessaries have been used not only for prolapsus but also for deviations, especially retroversion or retroflexion, by making their two opposite segments very unequal, for example, the posterior very large and the anterior very small (Figs. 161 to 164). The greatest improvement that has been made is their reduction to a simple ring, which is very light, and distends the

upper part of the vagina, being kept in position by its own flatness.



FIG. 162.—India-rubber ring pessary inflated.



FIG. 163.—India-rubber ring and air pessary intended for cases of retroversion.

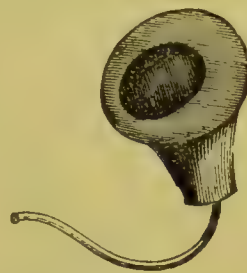


FIG. 164.—Air pessary excavated in front.

These modifications have originated the pessaries which go by the names of Meigs, Dumontpallier, and Gairal de Carignan.¹



FIG. 165.

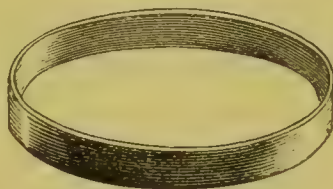


FIG. 166.

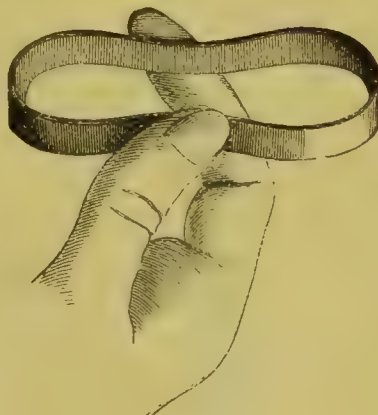


FIG. 167.

FIG. 165.—Meigs's watch-spring ring pessary covered with gutta percha, it has recently been imitated by Dumontpallier.

FIG. 166.—Gairal's ring pessary, differing from Fig. 165 in the ring being flat instead of round, which prevents its slipping after being placed in the upper part of the vagina which it is intended to distend.

FIG. 167.—Method of introducing the pessary into the upper part of the vagina.

Other pessaries distend the vagina in a straight line, or in an axis the extremities of which seem to be the two ends of a lever supported

¹ All these pessaries are considered useful in anteversion (preventing the cervix from inclining towards the posterior wall of the vagina) and in retroversion (preventing the fundus from falling backwards). But it is sometimes necessary to place the posterior side in front, which proves that they act less in redressing the uterus than in supporting it.

simply by the pressure which the stretched vaginal walls exercise on them. Sometimes they distend the upper part of the vagina across, or from one side to the other, before or behind the uterus. The most primitive of these instruments is the simple spring to which Kilian

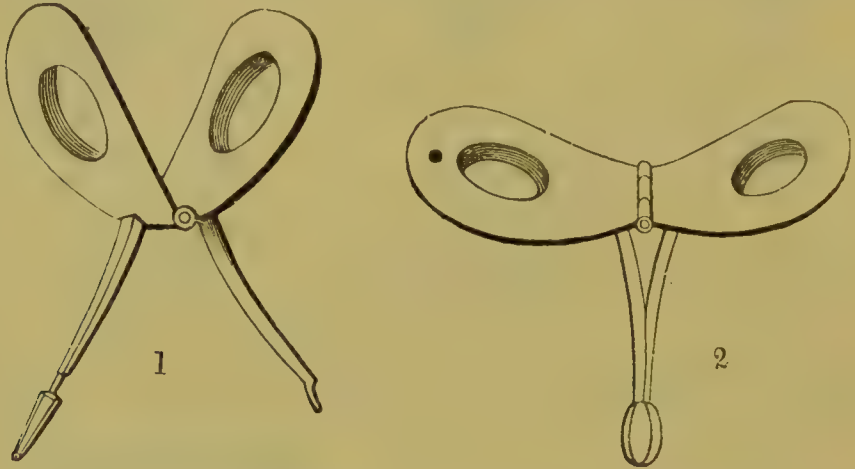


FIG. 168.—Zwanc's Hysterophore. 1, when being introduced; 2, kept open in the vagina.

has given the pompous name of elytromochlion (vaginal lever); others consist of two wings, which are closed whilst the instrument is being intro-

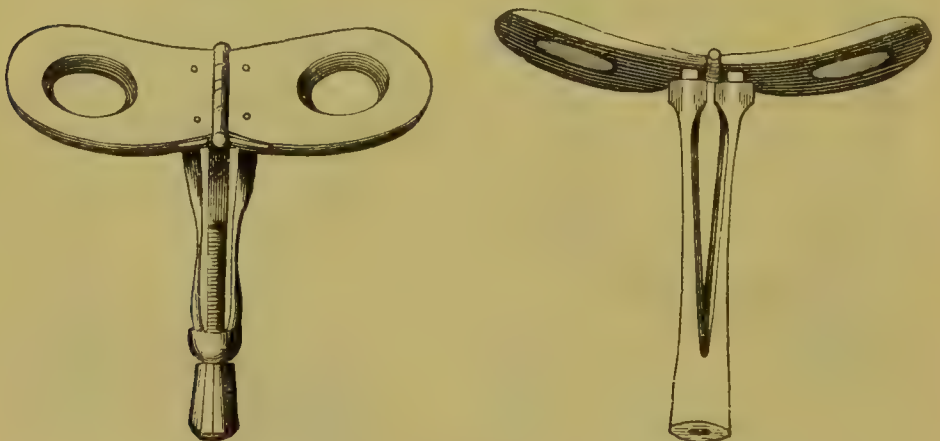


FIG. 169.—Schilling's hysterophore.

FIG. 170.—Zwanc's hysterophore modified by Savage.

duced and opened when it is in place. They are kept in position by a screw fitted into one of the stems (as in Zwanc's hysterophore); or by a simple hook at the end of one of the stems into which the end of the other fits (as in Weiss's hysterophore); or by a vice common to the two stems, regulating the degree of divergence (Schilling's); or by an elastic ring (Eulenburg's); or better still by an india-rubber tube split at the top, which is attached to both wings, keeping the stems closed in the vagina (Savage's), which is the simplest and therefore the best (Figs. 168 to 171). Sometimes they distend the vagina from

before backwards as well as support the uterus. Such are the excavated pessary for retroversion, the battledore pessary of Hervez,¹ the triangular one of Simpson and Priestley, which rests on the vagina on one

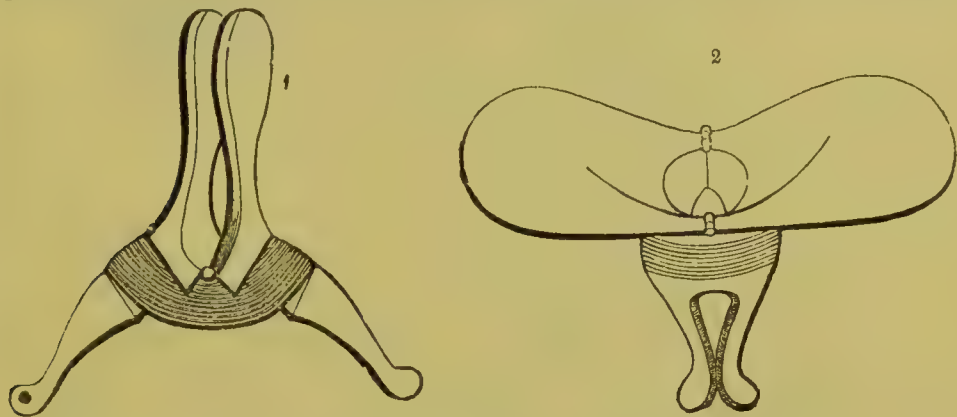


FIG. 171.—Zwanck's hystrophore modified by Eulenburg: 1, shut; 2, open.

side and on the perineum on the other. Such, too, are Hodge's lever pessary and Graily-Hewitt's cradle, which rest on the posterior *cul-*



FIG. 172.—Hervez' battledore pessary.

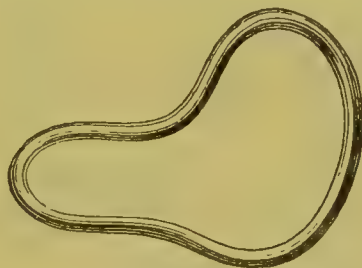


FIG. 173.—Simpson's and Priestley's triangular pessary.

de-sac on the one side and on the anterior wall of the vagina on the other.

I have modified the latter pessaries, adapting them to the cure of



FIG. 174.—Hodge's horse-shoe pessary, silver gilt.



FIG. 175.—Hodge's lever pessary of silver, gutta percha or tin. The same in aluminium (Sims).

retroflexions by hollowing out the posterior part of the ring so as to push back the cervix instead of passing behind it and pushing back the

¹ *De quelques déplacements de la matrice et des pessaires les plus convenables pour y remédier, Mémoires de l'Académie de médecine, t. ii, p. 319. Paris, 1833.*

vagina. It is a good plan to try them first in each patient, choosing them of the size and shape best suited to each, and on the first application to use rings of tin or lead, which take any form given to them.



FIG. 176.—Hodge's pessary in position for retroflexion.



FIG 177.—Hodge's pessary modified by Courty, so as better to maintain the reduction of the retroflexion.

Afterwards they should be made on this model in aluminum, a light and unalterable metal, which is so well tolerated by patients that it



FIG. 178.—Graily-Hewitt's cradle pessary.

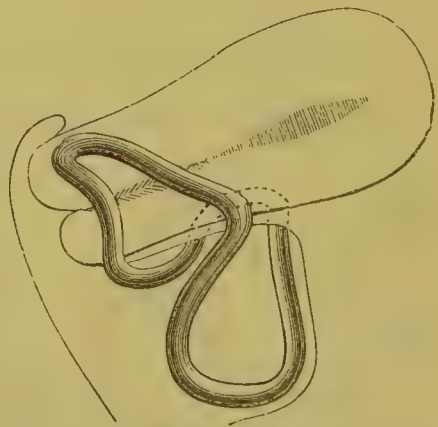


FIG. 179.—Graily-Hewitt's pessary modified by Courty, so as better to maintain the reduction of the retroflexion.

does not hinder the accomplishment of any function, not even of coitus.

Lastly, there are pessaries which have an external as well as an internal *point d'appui*. The external fulcrum varies. It may be the

straps which pass under the thighs crossing at the vulva (Fig. 181), in which case it is distributed to the four opposite points of the belt,



FIG. 180.—Cup-and-ball pessary having an external fulcrum.

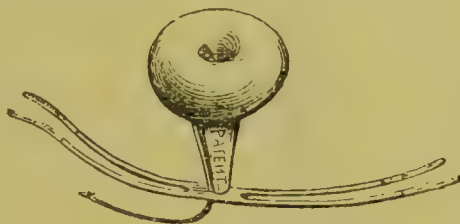


FIG. 181.—Bourjeaud's air pessary, supported by india-rubber straps crossing under the vulva.

which is only the more firmly fixed for being drawn downwards by the tendency of the uterus to prolapsus. It may be the plate of a hypogastric belt (Fig. 182), an arrangement which is much better for the patient, but which requires more skill in the construction.

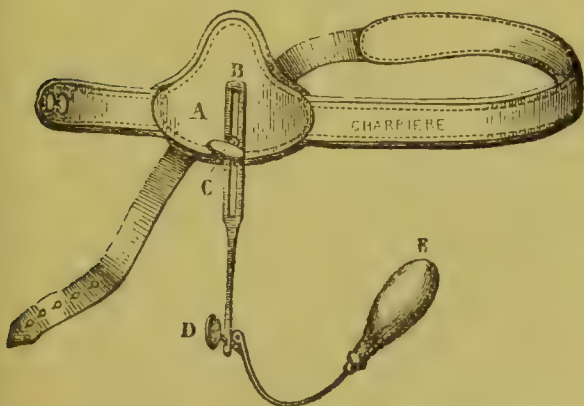


FIG. 182.—Roser's hysterophore, modified by Scanzoni and Charrière.

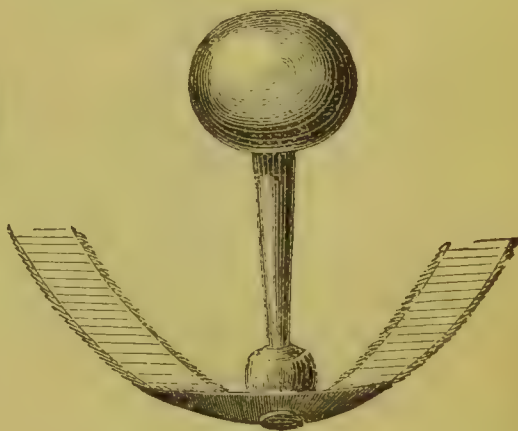


FIG. 183.—Scanzoni's pessary with ball-and-socket joint.

The internal fulcrum varies also. Sometimes it is the vagina, the anterior *cul-de-sac* being supported against the pubis, so as to raise at the same time all the rest of the organ and the uterus itself, unless there be great relaxation of the posterior wall, rectocele, retroversion, &c. (Figs. 182, 183). Sometimes it is the cervix which is directly supported by means of an india-rubber, ivory, or metallic ring (Figs. 180, 181). The only means of making this pessary bearable is to adapt a system of elastic articulations or supports to its stem, which allow free movement to the patient without danger of displacing the pessary or causing pain.

3. *Intra-uterine mechanical supports* are also known by the name of *redressors*; that of uterine director, however, would be more correct. The first and I think the best (Fig. 184) of these instruments was invented by Simpson. It is a hollow metallic stem (generally made of two different metals in order to produce a current of electricity), and

terminates in a hollow bulb; the stem is introduced into the uterus, the bulb remaining in the vagina where it is kept in position by a large



FIG. 184.—Simpson's intra-uterine stem pessary or galvanic director.

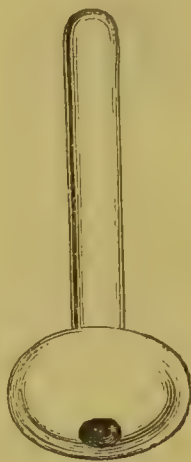


FIG. 185.—Stem pessary of aluminium for dilating the os.

tampon saturated with glycerine. It is made of various sizes in order to serve as a dilator in cases of constriction (Fig. 185). This instrument has the advantages of not straightening the uterus violently, of acting on the flexion without acting on the version at the same time, and of leaving the uterus mobile, thus avoiding irritation of this organ or the surrounding parts, which are more frequently inflamed than we imagine. Kiwisch invented an intra-uterine stem pessary composed of two branches, which opened after being introduced, and so fixed it more firmly in the uterus. In order to fix it more firmly in the vagina Detschy associated it with a hysterophore, whilst Valleix attached it to an external support. All these professed improvements have only created new dangers which have led to its proscription. In order to introduce it anew and to procure from it all the benefits that it alone can give, I have had on the contrary to free it from all these pretended aids and reduce it to its simplest form.

II. *Topical remedies.*—Before describing local remedies and the way of applying them, I must not omit to mention the best kind of forceps for making such applications. Those which I use have short blades, and are consequently very strong and useful for dilating the uterine orifice; they are straight or curved, and grooved so as to hold a needle or crush the pedicle of a polypus, with a catch or screw near the handles to graduate the pressure.

Topical remedies are solid, liquid, or gaseous.

1. Among *solid applications* I give the first place to tampons of cotton wool or lint, and to the little operation of plugging, which must be done in a methodical manner, whether it be to arrest a hæmorrhage or to maintain various medicaments in contact with the cervix, or to prevent the cervix from coming in contact with the vagina, or the opposite walls of this canal from touching.

It has lately been proposed to substitute for plugging with lint or cotton wool the introduction of an india-rubber bag (Gariel's pessary), which is to be distended with air or cold water when in the vagina; but the use of this pessary is painful, it does not allow of the convenient application of medicines, and, moreover, it is not always at hand like cotton or lint. I also find it inconvenient to plug by means of a compress previously introduced into the vagina, and serving as a receptacle for the cotton; because, whatever may be said, it is not possible to withdraw all at the same time; that is, if the plugging has been sufficient to distend the vagina.

The simplest and most efficient way is the following: The vagina having been cleared of the clots it contains, and washed with cold water or an astringent liquid, the speculum is introduced, after which a large pledget of lint charged with some medicinal substance (alum, tannin, perchloride of iron, iodine, or any caustic) is placed in contact with the cervix. Afterwards a number of tightly rolled balls of cotton wool are added, which by means of long uterine forceps we try to place in the farthest corners of the vagina, so as to stretch it and to surround the cervix. Pajot¹ tells us Dubois proved by experiments that pledgets of charpie mixed with pieces of agaric are more efficient even than cotton in opposing an insurmountable barrier to the blood. The speculum is gradually withdrawn

in proportion as the vagina is filled, and in this way the whole space is filled by a multitude of little pledgets till the vulval orifice is

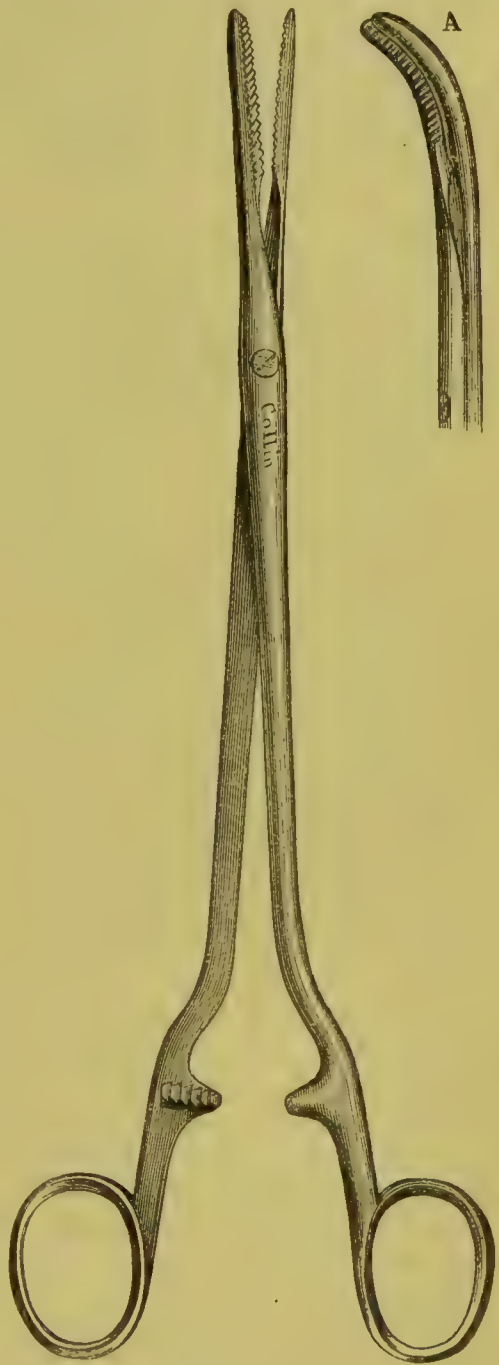


FIG. 186.—Courty's straight uterine forceps. A, the same, curved.

¹ *Archives générales de médecine*, février, 1867.

reached, on which is laid a larger one, supported by a graduated compress firmly fixed by a T-bandage. It is necessary to remove some of the cotton wool a few hours afterwards, in order to allow of the patient passing water or to catheterise her; the next day, or the day after, the rest is removed by degrees, care being taken to make repeated injections. By means of the fingers and the long forceps the greater part of the cotton wool is easily extracted; as for that which is in contact with the cervix and which ought to be left a little longer, its extraction is facilitated by frequent injections made on the bidet.

When the plugging is intended merely to maintain a medicament in contact with the cervix it may be reduced to two tampons, the first applied to the cervix and a second much larger one to keep the first in position. To keep the vaginal walls from touching one is sufficient; this may be charged with a medicament such as alum or tannin, or it may be saturated with a solution or covered with an ointment; or it may be replaced by a bag containing inert powders for absorbing the liquid secretions, or medicated powders, emollients, tonics or astringents, to modify the diseased surfaces as well as to absorb the secretions. In the acute stage *cataplasms* are substituted for bags. Linseed ferments easily, therefore it is better to use starch, rice or bread; glycerine is better still. Take as much fine cotton wool as the hollow of the hand will hold, soak it in tepid water, and after squeezing it out saturate it with glycerine and introduce it into the vagina.¹ It possesses the properties of absorbing moisture, disgorgeing the tissues with which it is in contact, and of being in some degree disinfectant. Lastly, it facilitates the absorption of medicines mixed with it under the name of glyceroles.²

The drawbacks of plugging are so considerable that it has been proposed to substitute for it the introduction of *inert powders* into the vagina. Récamier used them frequently, Aran also, and they may always be resorted to when there is an indication to dry the vagina by the absorption of fluids accumulated in its cavity. Starch powder may be used, or lycopodium, or rice flour or common flour; starch is most frequently used. The bivalve speculum is introduced, and after all the mucus is removed, from ʒj to ʒj of starch powder is thrown into the cavity of the instrument, then the speculum is withdrawn, and if the vulval orifice is too large to retain the powder a large plug of cotton wool must be introduced. After twenty-four or thirty-six hours the patient makes a vaginal injection to moisten the starch and bring it away. When the disease is at the vulva it is sufficient for the patient to open the labia and powder the parts exposed.

Before introducing the starch it may be moistened with laudanum or some other medicament, which, owing to the starch taking the form of the vagina, is kept in contact with the parts better and more gently than by means of cotton. I do not contest the utility of this application,

¹ Sims, *Clinical Notes on Uterine Surgery*. London, 1866, p. 70.

² Demarquay, *de la Glycérine et de ses applications à la chirurgie et à la médecine*, 2^e édit. Paris, 1868.

but I am not in favour of leaving foreign bodies in the vagina in contact with the cervix unless in exceptional cases.

Lastly, in place of inert powders, we may apply oak bark, catechu, powdered cinchona, or even more active substances, such as alum, tannin, sulphate of zinc, calomel, bismuth, &c. As a rule these active substances should be mixed with an inert powder in variable proportions, according to the effect which it is desirable to produce; or they should be applied in the centre of a light plug of cotton wool. One of the best powders for modifying diseased surfaces is the subnitrate of bismuth.

Plugging by ice has been recommended by Aran¹ as preferable to the refrigerating mixtures employed in cases of cancer by Arnott, to whom we owe various experiments on the anæsthetic action of cold. It consists in bringing into contact with the cervix a greater or less quantity of ice broken into little bits, which may either be simply left in the vagina or may be renewed as it melts. In both cases the cervix is exposed by means of a speculum, of wood, if we only wish to act on the cervix and in a moderate way, of metal, if we wish to act more energetically; the quadrivalve speculum is convenient for this application. When the ice is not to be renewed, we must take care to retain it by means of a large pledget of lint introduced when the speculum is withdrawn: reaction is then less rapid and less disagreeable. The refrigerative action is much more marked when a metallic speculum is used; it is exercised on the whole of the vagina as well as on the cervix. With the exception of temporary colic in the abdomen anæsthesia is complete in a few minutes; by continuing the application of ice from a quarter of an hour to an hour the action exercised on the circulation and sensibility of the pelvic organs may be so great for several hours as to lead patients to think they have been freed from all their troubles, and to allow of their walking and attending to their various duties. Aran said that the reaction was insignificant; he renewed the application every day or every two days eight or ten times in the course of treatment.

Whilst admitting that plugging with ice may be of great use in cases of hæmorrhage, cancer, hyperæsthesia, neuralgia, inflammation and congestion, in which it was especially used by Aran,² I must say that the indication for it has never seemed to me so marked as to lead me to have recourse to it. It cannot be denied that it exposes the patient to too energetic reactions, and that it is an inconvenient application, as well as being sometimes impossible, from the difficulty of getting ice. In most cases cold irrigations with refrigerating applications to the abdomen are sufficient.

Painting the cervix with collodion.—Mitchell³ has introduced this means as a substitute for nitrate of silver in the treatment of ulceration of the cervix. This organ having been wiped, collodion is applied with a camel's hair brush; twenty minutes is allowed for the medicine

¹ Op. cit., p. 220.

² Ibid., p. 379.

³ *Dublin Medical Press*, October, 1848.

to dry, and one or two additional layers are then applied in the same way. This application must be renewed in forty-eight hours because the secretion which accumulates under this varnish detaches it. In the case of simple abrasion, three applications were sufficient. If the disease is more obstinate, if there are large granulations, this physician uses in the first instance nitrate of silver, acid nitrate of mercury, or solution of caustic potash, applying the collodion above.

I think that the application of collodion ought to be confined to two kinds of cases: elastic collodion for very superficial erosions and excoriations of the cervix; pure collodion in cases of engorgement or œdema to obtain a reduction in bulk of the organ under the influence of the contraction which the collodion undergoes in drying.

The majority of solid medicated topics are *ointments*, varying in consistency from that of suppositories to almost liquid preparations.

Vaginal suppositories, like suppositories introduced into the rectum, were used by the ancients in remote times. Their use has been revived by Simpson under the name of *medicated pessaries*. They are conical, cylindrical, or ovoid, the latter being the best form for enabling the patient to push them to the farthest end of the vagina, and also for increasing the chance of retention. In size they must not exceed one inch in length by half an inch in width. They are made of wax and lard or cacao butter in suitable proportion to give them a proper consistency; they contain a certain quantity of some medicinal substance, sedative, astringent, or resolvent; such as mercurial ointment, iodide of lead, extract of belladonna, &c. The patient introduces them into the vagina in the evening, pushing them back as far as possible; they melt in a few hours, and a tepid injection made the following morning removes whatever has not been absorbed. We must not count too much on the action of these pessaries; in the first place they do not always melt well however carefully they have been made; in the second place the power of absorption of the vaginal mucous membrane is not great, especially for oily bodies. When rapid and energetic action is desirable, whether sedative or resolvent, it is better to introduce them into the rectum. The *ointments* which I use most frequently are the ordinary mercurial ointment with the addition of a tenth part of the extract of belladonna, or ointments containing calomel, red oxide of mercury, iodide of lead, potassium, &c. I apply them to the cervix simply on a pledget of cotton wool and withdraw the speculum, or I put a thick layer of ointment on a little round mat of coarse thread, the size of the cervix, which the patient could crochet or knit in a few minutes, and which forms a little cup for holding the uterus. I apply this to the cervix, keeping it in position by means of a large pledget of cotton wool.

When it is necessary to make applications to the uterine cavity I use special instruments, which I will afterwards describe along with intra-uterine caustic holders.¹

2. *Liquid applications* are easily applied to the cervix and vagina.

¹ See p. 336.

I often use them to modify the vaginal surface in place of prescribing injections or lotions for the patient. After having cleansed the vagina it is easy to apply a liquid to the whole of its surface by means of a brush whilst the speculum is being withdrawn. In this way great effect is produced, and we are surprised to see vaginal leucorrhœa, erosions, even ulcers cured in a few days or a few weeks, which had been treated for months past by injections without any result having been produced. There are various modes of applying liquids: sometimes the medicament is poured into the speculum followed by an inert powder which absorbs it and forms a magma round the cervix. When the action is to be limited to the cervix it is poured into the speculum, and after being left in contact with the cervix allowed to escape by lowering the speculum; or it may be applied by means of a pledget of lint or a camel's hair brush. When caustics are used the surface touched should generally be washed as soon as the desired action has been produced and before withdrawing the speculum. The liquids most frequently used are sedatives, astringents, solvents, stimulants, cathartics. Laudanum is useful not only as a sedative but to induce cicatrization. Solutions of alum and tannin may be applied by means of a large brush to the whole of the utero-vaginal mucous membrane. The other liquid astringents are solutions of acetate of lead, solutions of peroxychloride of iron, dilute tincture of iodine, &c. The principal cathartic liquids, which may be either resolvent or stimulating, are: tincture of perchloride of iron, especially in cases of diphtheria, a saturated solution of chlorate of potassium, pure tincture of iodine, iodoform, a solution of corrosive sublimate, and above all the solution of nitrate of silver, or a camel's hair brush dipped in water and then applied to the solid crayon may be used. Several of these liquids may be advantageously used mixed with glycerine. Glycerine as an emollient may be employed alone in cases of erosions and superficial ulceration. There are very few of these substances which do not affect metal; therefore, as a rule, I use a wooden, glass, or gutta-percha speculum for all liquid applications. When irritant or caustic liquids are used care must be taken to remove with a little cotton wool all that may remain on the cervix or vagina, lest it should touch the lower part of the vagina or the vulval orifice which are extremely sensitive.

Lastly, it must be remembered that however important local treatment may be it must not be abused, especially with patients who do not tolerate it easily.

3. The only *gaseous applications* that have been used in the treatment of uterine diseases are chloroform and carbonic acid. *Carbonic acid* was first used as a local anæsthetic by Ingenhousz. In 1834 Rozier injected it into the vagina of women suffering from cancer of the uterus; it was also recommended by Mojon in injections to alleviate pain and to induce the catamenial flow. It was introduced into use in Scotland by Simpson and into France by Follin and Broca. Demarquay and Monod, who have also tried it, think that vaginal injections of carbonic acid produce good effects when the mucous

membrane is denuded, whilst no effect is produced when the tissues are whole.

Different apparatus may be used: the simplest is an ordinary bottle furnished with a conducting tube (Simpson); but the most convenient is that of Fordos. The canula is first introduced into the vagina, then the apparatus is charged. An ounce of tartaric acid in large crystals is first put into the carafe, then 2 oz. of bicarbonate of soda in powder; half a pint of water is then poured in and the carafe is filled up with a tin tube containing fragments

of marble and pieces of sponge, which filter the gas as it is liberated, freeing it from the saline and acid particles that are mechanically swept out. By saturating the pieces of sponge contained in the tin tube with chloroform we have the anæsthetic action of its vapours in addition to that of the carbonic acid, and we avoid the current of air produced in the vagina by the injection of chloroform fumes alone.

Charles Bernard¹ has mentioned cases of cerebral accidents caused by these injections; but they must happen very seldom, and do not contra-indicate the use of this means. A more serious drawback is that carbonic acid, like chloroform, whilst soothing pain provokes congestion of the diseased parts, which ought to lead to its rejection in cases of fluxion, congestion and metritis, its use being reserved for hyperæsthesia and uterine neuralgia.

Chloroform has been administered by Hardy (of Dublin) in vaginal injections in the form of

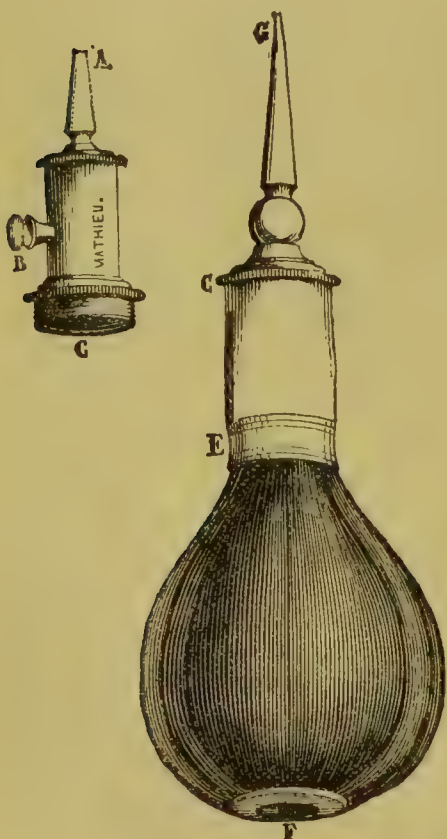


FIG. 187.—Hardy's india-rubber insufflator with double valve and reservoir.

vapour. The apparatus invented by this surgeon is composed of a small metallic cylinder, in which is placed a sponge saturated with chloroform. A tube is adapted to one extremity of this cylinder, communicating with an india-rubber bag distended with air. Another

¹ *Archiv gén. de méd.*, 5^e série, t. x, p. 529, 1857.

Scanzoni, *Beiträge zur Geburtskunde und Gynäkologie*, 1858, t. iii, p. 181, has mentioned a case of death after the injection of carbonic acid into the cervical cavity. Death took place in one hour and three quarters. It made a great sensation in Germany, and led to Breslau's and Vogel's experiments on pregnant rabbits. See *Wiener medizinische Wochenschrift*, 11 Sept., 1868. The *Gazette hebdomadaire*, 1858, p. 741, gives an abridged account of the article.

tube is attached to the other extremity of the cylinder, terminating in a long india-rubber canula, which ought to reach the cervix when introduced into the vagina. By compressing the india-rubber bag it is emptied of the air which it contains, and this air in passing through the cylinder is charged with anæsthetic fumes which are introduced into the vagina by means of the canula. A valve allows the re-admission of air into the bag from which it is again driven through the cylinder. This apparatus, with slight modifications, has also been utilised for the insufflation of medicated powders into the vagina and uterus, but it is better to use a camel's hair brush.

III. *Operations* are of two kinds. The first are small operations analogous to dressings, only differing from them in the nature of the substances used; for when there are caustics the danger incurred necessitates great care and prudence. The second class includes special operations for special diseases, in performing which the observance of the ordinary rules of surgery is required. I will describe all, entering, however, into more minute details when treating of those which occur most frequently.

The *posture* which the patient ought to adopt in order to facilitate the different operations which have to be performed on the uterus and vagina, with or without speculum, varies. In each case we must take care to resort to the one which theory and practice teach us is the best. These postures are:—1, Supination on the back as for lithotomy; 2, lumbo-sacral supination (the first exaggerated), so as to raise the vulva more; 3, right or left lateral pronation; 4, pronation on elbows and knees; 5, pronation on the edge of the bed, the feet touching the ground, the chest, head and arms on the bed. The three last postures are sometimes very convenient after dilatation of the vagina, owing to the introduction of air, as well as to the projection of the uterus towards the hypogastrium and of the intestines towards the umbilicus. This projection exposes the posterior vaginal *cul-de-sac* very clearly, and the horizontal position given to the cervix is favorable for applications.

Most of these operations are facilitated by the use of tenaculum hook forceps. These are of two kinds:—1. The converging tenaculum forceps, made to glide so as to seize at different heights the part required to be held, and to disarticulate so as to make two very fine single hooks; 2. the diverging tenaculum forceps, which is an excellent instrument of prehension and distension.

A. *General operations*.—The small operations requiring to be repeated frequently like dressings are: the application of electricity, of the actual or potential cantery, intra-uterine injections, &c.

1. *Electricity* may be employed as a sedative, stimulant, or resolvent. Under the form of the continued current it exercises a sedative action on the uterus as on other organs or on nerves affected with rheumatic neuralgia. Under other forms it stimulates the vitality of the tissue, accelerates absorption in cases of engorgement and hypertrophy, excites muscular contraction, thus reducing the size of the

congested organ, and by strengthening the relaxed tissue corrects flexions, &c.

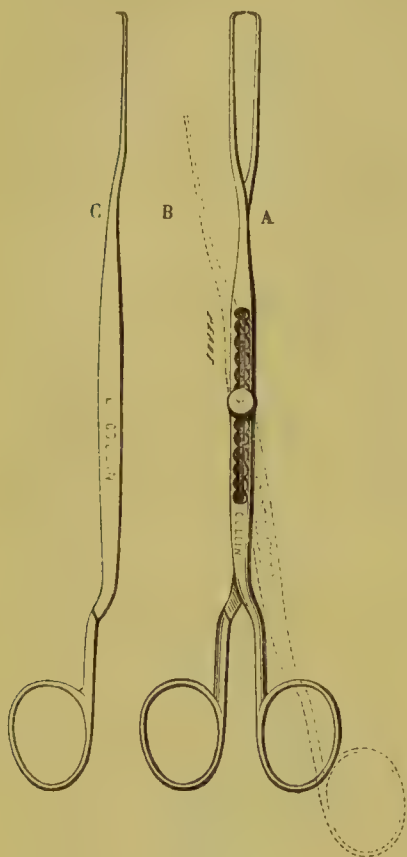


FIG. 188.

FIG. 188.—Converging and sliding tenaculum hook forceps: A, forceps when shut; B, one of the branches of the forceps open, sliding on the articulation; C, one of the branches separated from the other serving as a simple tenaculum hook.

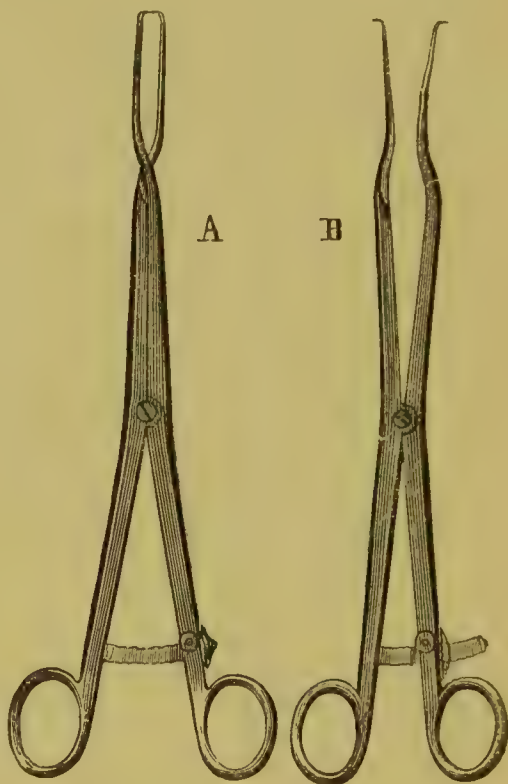


FIG. 189.

FIG. 189.—Diverging tenaculum hook forceps: A, shut; B, open.

2. *Cauterisation of the cervix.*—This is one of the most useful and therefore one of the most frequent operations. At the same time the indications for it are somewhat difficult to determine, for it may be resorted to in the treatment of several diseases. It is not surprising that it should have been, and still is, the means most frequently abused.

I can affirm, as the result of long experience, that when suitably applied it renders greater services perhaps than any other means in the treatment of uterine diseases; but, on the other hand, when employed in spite of certain definite contra-indications very commonly misunderstood, and especially when used as a universal panacea for all uterine diseases, it has done as much harm as good, in aggravating or perpetuating a number of maladies which would have been cured but for it. The most serious consequences are the producing of constrictions and obliterations of the cervical canal, and the setting up of sup-

puration from its application when applied to patients suffering from peri-uterine inflammation which has passed unnoticed. The potential as well as the actual cautery may be used.

Potential cauterisation.—The caustics used may be liquid or solid.

The *liquid caustics* most frequently used are the acids, especially the acid nitrate of mercury. Next to it we may place the perchloride of iron, the tincture of iodine, which acts as a caustic when applied to bleeding or ulcerated surfaces, and the saturated solutions of the solid caustics, which may be either cathartic or caustic, according to the degree of saturation and the condition of the surface to which they are applied.

The *acid nitrate of mercury*, recommended by Récamier and employed by Lisfranc and several other physicians in preference to other caustics, has been in very general use. It is very much in vogue even now, enjoying, as it seems to me, an undeserved reputation among the profession. It is employed in cases of granulation and simple ulceration, pure or diluted, according to the indication. A brush made of lint, or a small piece of sponge cut in the shape of a cone is applied to the ulcerated surface. Immediately afterwards cold water is poured into the speculum to prevent any stray drops of the caustic from spreading in the vagina. In addition to the drawbacks which it has in common with other liquid caustics, it has another which alone should cause its rejection: in some women it induces an inconvenient and obstinate salivation.

This, although at first disputed by some writers, is now an established fact. Therefore I prefer nitric, sulphuric, hydrochloric and chromic acids, pure or diluted with water, in variable proportions, or alkaline solutions, like potash, creasote, or better still, perchloride of iron, the saturated solution of nitrate of silver or tincture of iodine. These last named, however, are cathartic rather than caustic. When real liquid caustics are used care must be taken to wipe the wet brush before applying it, so that only the part requiring to be cauterised may be acted on and not the surrounding tissue.

But whatever precautions are taken, liquid caustics will always have two serious drawbacks. 1. It is difficult to determine the depth to which they penetrate. 2. It is still more difficult to prevent them from spreading beyond the point desired and to be certain that the healthy surfaces will escape their action. Therefore I have almost given up using them, only employing cathartics, which, infiltrating all the sinuosities of a denuded or ulcerated surface, help cicatrization. In all cases where cauterisation is necessary I have recourse to the actual cautery, or to a solid caustic like canquoin, or any other that is deliquescent or pulverulent.

Of *solid caustics* canquoin is one of those I use most frequently. I do not understand Gendrin's preference for the Vienna paste; its advantages ought to be great to compensate for the difficulties in applying it. It is true that these difficulties are overcome in the preparation made by Filhos; but even with it there is great uncertainty as to the extent and depth of the scar, besides the necessity of using

quantities of water in washing the surfaces, and the possibility that in spite of all precautions some of the caustic may remain. All these disadvantages present such a striking contrast with the simplicity of the actual cautery, that in spite of the high authority of Gendrin's practice and of Henry Bennet's recommendation, I cannot understand how the use of Filhos's caustic has come to be adopted. Besides, we know that all these alkaline caustics produce soft scars, make the blood diffuent, and induce hæmorrhage.¹

Therefore when I find that the actual cautery will not produce sufficiently deep scars, especially on hard, friable, bleeding tissues, like cauliflower excrescences, and that it is not followed by that modification of the surrounding surfaces which seems to be effected by certain caustics, I never have recourse to any other caustic than chloride of zinc, so highly recommended by Bonnet, of Lyons, and which I had previously used repeatedly with success. Chloride of zinc hardened with a variable quantity of flour and spread on linen in layers of varying thickness forms what is called canquoin plaster, its caustic strength depending on the relative quantity of the chloride and on the thickness of the layer of paste. Nothing is easier than to cut a little circle of this plaster and place it on the cervix, or to roll it up and introduce it into the ragged cavity of the cancerous organ, or to cut it in small arrows to be inserted into the tumour, according to Maisonneuve's plan, keeping it in place by plugging. This is the least painful and least dangerous mode of applying this caustic. If the piece of plaster is not very thick, and if the portion of the organ which has to be destroyed is considerable, the application may be left for twenty-four hours, otherwise it may be removed in a few hours. Copious injections of tepid water must then be made, after which it may be advisable to introduce tampons, either dry or covered with cold cream, at least into the farthest extremity of the vagina, to prevent any fragments of the caustic that may be softened and brought away by the suppuration from destroying the corresponding part of the vaginal walls. I have frequently seen considerable destruction of the vagina result from an awkwardly made application of this caustic, which is really dangerous in inexperienced hands. When the scar falls a second application can be made when necessary.

I often use deliquescent chloride of zinc, over which I pass a wet camel's-hair brush, which is then applied to the parts needing cauterisation. At other times I have recourse to Rousselot's red arsenical powder, or that of Friar Côme, which is better still. It contains more arsenic, and is as efficacious in ulcers of the cervix as in those of the face, to which it is generally applied.

Chromic acid is also a valuable caustic, provided it is not applied over too extensive a surface, so as to produce poisoning characterised by vomiting.

Nitrate of silver, which is the most used of all, is not essentially destructive. It acts as a simple modifier when used in solution; as cathartic when a wet brush is saturated with this salt by being passed

¹ Philippeaux, *Traité pratique de la cautérisation*. Paris, 1856.

over the crayon several times; as a protector of the ulcerated surfaces by the coagulation of mucus and the precipitation of chloride of silver acting almost in the same way as collodion; in repressing exuberant granulations when the crayon is applied. Lastly, in modifying as well as destroying tissue when the powder or crayon is left in the uterine cavity, a method to which I will afterwards refer when treating of intra-uterine cauterisation.

The actual cautery.—It is specially suitable as an application to the cervix, for this organ is almost insensible to the action of fire—at least to the pain which this action produces on other tissues.

There is no better mode of applying fire to diseased surfaces than by means of red-hot iron.

Although this means has been employed for long, it has probably never been used with method and discrimination till our own time. Larrey¹ gave all the necessary operative details, but it was Jobert's² works that popularised this operation in gynecological practice. As I believe that additional information on this subject would be welcomed, I will relate what a long practice has taught me.

Several kinds of cautery are necessary, according to the use for which they are intended. I use two kinds especially; the first are very fine, with a reservoir for heat for ignipuncture; the others spear-

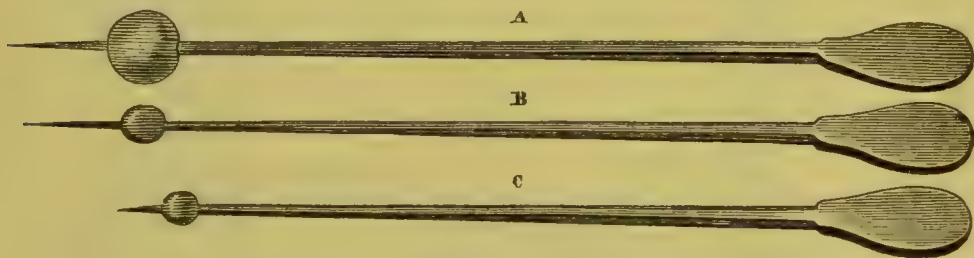


FIG. 190.—Cauteries for ignipuncture.

shaped, straight or curved, for ignilysis or section by fire. I have also conical cauteries of every size down to that of a grain of corn, others

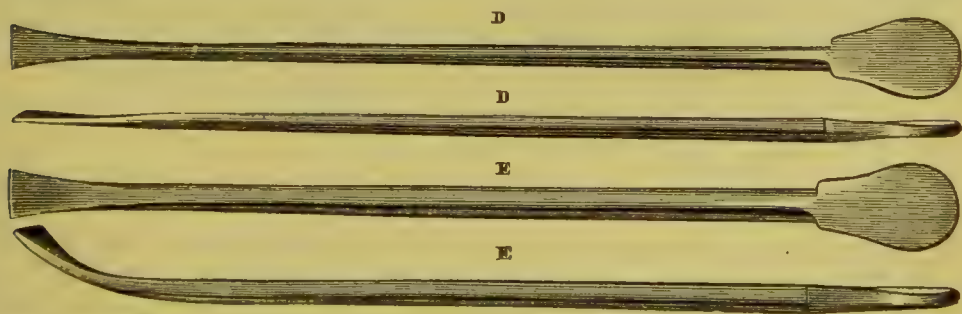


FIG. 191.—Cauteries for scarifications, sections and excisions by fire. D, straight; E, curved.

cylindrical, nummular, &c.; I even had a cup-shaped one made for

¹ *Clinique chirurgicale*, t. ii, pp. 114, 829. Paris, 1830—1836.

² *Plaies d'armes à feu, Mémoire sur la cautérisation*. Paris, 1833.

destroying an irreducible inverted uterus, and I used it afterwards for cauterising a cervix enormously engorged or hypertrophied. I have found nothing better for heating the cauteries than the eolipyle spirit lamp which solderers generally use. I think this lamp and these cauteries are to be preferred for this purpose even to the thermo-cautery, although I admit the superior advantages of the latter in other circumstances.

The operation of cauterisation is performed in the following manner: after introducing a speculum of wood or of glass, the uterus is seized firmly and the speculum pressed against it so that it cannot escape, the operator being on his guard against any movements that the patient may make; the cervix is then well wiped with cotton wool; if it is bleeding the cotton ought not to be withdrawn till an assistant has brought the cautery, which must be at white heat. Whilst the left hand holds the speculum the right applies the cautery to the uterus, and, according to the object in view, the uterus is barely touched, or the iron may pass lightly over different points of its sur-

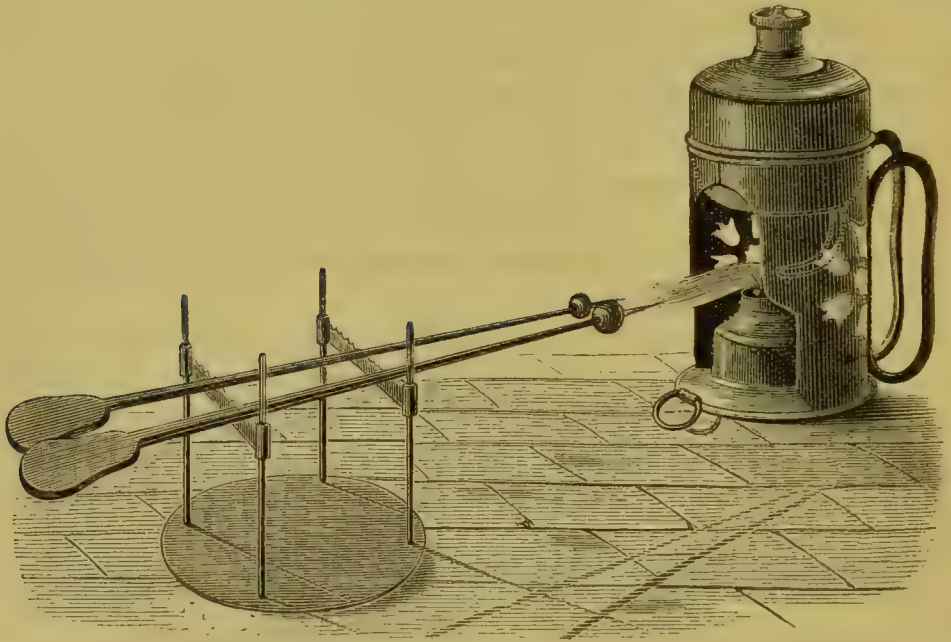


FIG. 192.—Eolipyle spirit lamp for heating cauteries.

face, or may be left in contact with some point for a few instants, and when necessary be replaced by a second cautery; or, lastly, it may even be introduced into the cervical cavity, care being taken to protect the healthy part by one of Récamier's large curettes. In most cases, however, the operation is much simpler, being limited to one or more punctures varying in depth from 5 to 15 millimetres, in one or other of the lips of the cervix. At other times excision of the diseased part may be performed by making use of a univalve in place of a cylindrical wooden speculum, and fixing the cervix by means of fine tenaculum hook forceps.

Immediately the cautery is withdrawn cold water should be poured into the speculum several times; this instrument may then be withdrawn, when the patient is placed in bed in the dorsal decubitus with legs and thighs flexed. Cooling applications may be made to the hypogastrium, vulva, and upper part of the thighs, of vinegar and water, the ice-bag, &c.

Serious accidents may happen after cauterisation. They rarely occur unless the patient is suffering from metritis, ovaritis or perimetritis. However, the freedom from pain during the operation, the superficial action of certain slight cauterisations and the absence of troublesome consequences after imprudences committed by some patients subsequent to this operation, have inspired some practitioners with too blind a confidence in the innocuous nature of this means, and a blameable temerity in its use. I have seen patients who had actually been cauterised by a doctor in his consulting room! I have also seen the deplorable consequences of such imprudence. Although the cervix is not sensitive to pain, there is none the less a reaction after the traumatism that has been undergone. An inflammation of elimination is necessarily developed round the scar; this inflammation if neglected may pass the limits within which it ought to be confined, and originate very serious pathological phenomena. Therefore, in order to avoid all accidents every possible precaution should be taken, not only by avoiding cauterisation even with nitrate of silver during the week preceding the catamenia, but also by insisting on the patient remaining in bed for several days, the hypogastrium being covered with cooling or emollient applications. She should take an emollient bath every day, remaining in it for an hour at least, and making vaginal injections all the time; or if this cannot be done, vaginal irrigations should be made several times a day with some disinfectant. Thanks to these precautions, I have



FIG. 193.—Ignipuncture of the cervix, which is kept fixed by the diverging tenaculum hook forceps.

never seen any accident follow the numerous cauterisations I have performed, but on the contrary they have always produced good results.

When the cervix is very much engorged or when considerable follicular hypertrophy exists, I follow the excellent advice given by Huguier, making a number of scarifications before cauterising.

The cervix may be cauterised even during pregnancy if the precautions are taken which I have just detailed. I need hardly say that the redhot iron is not to be applied to the cervix of a pregnant woman who is merely suffering from simple granulations, not exceeding the limits often assumed by this morbid condition during pregnancy, and giving no cause to fear a miscarriage. When, however, the cervix is seriously affected recourse may be had to cauterisation without misgiving; the operation being practicable from the end of the first month to the end of the sixth. There need be no anxiety as to causing abortion; on the contrary, one of the advantages of this little operation in such a case is, that it increases the chances against the occurrence of this accident.¹ Facts have proved to me not only the immunity of the actual cautery,² but also that its application in

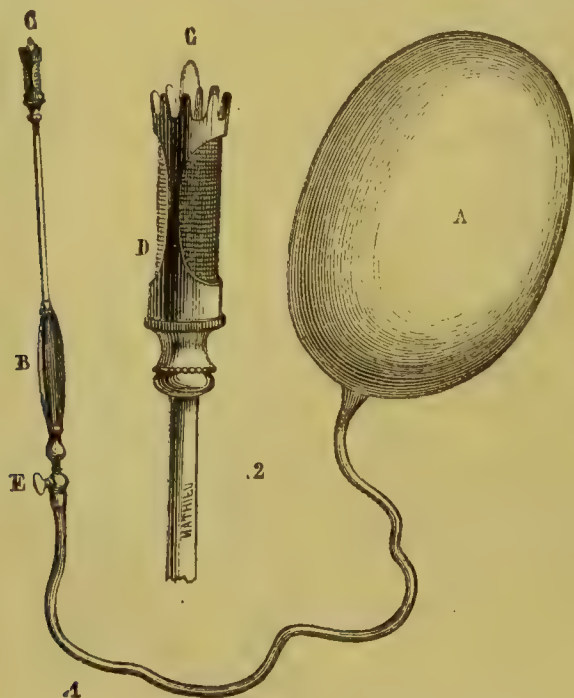


FIG 194.—Apparatus for cauterising with gas.

the case of pregnant women is followed in due time by a safe and normal delivery.³

¹ Mauny has published five cases of persistent vomiting during pregnancy, cured by cauterisation of the cervix with nitrate of silver or with acids. Paris, 1869.

² *Annales cliniques de Montpellier*, 25 août, 1853.

³ *Ibid.*, 10 avril, 1854.

I have also cauterised the cervical cavity when its mucous membrane was the seat of follicular or granular hypertrophy. Great care, however, must be taken to cauterise only the fungous and exuberant parts, protecting the rest from the action of the heat. Otherwise we should run the risk of causing scars, which might obliterate or at least narrow the orifices, as unfortunately too often happens.

Nélaton has recommended using the flame of a gas-jet in place of the red-hot iron. The advantages of this cautery are, that it does not frighten the patient, who need not even be aware of the kind of operation about to be performed; it allows the cauterisation to be defined as exactly as if done with a pencil, and above all it permits of a more energetic action, as the gas flame can be kept in contact with the diseased part as long as necessary. It is therefore superior to the red-hot iron in many ways. In other respects, however, it is inferior. It only acts on surfaces, it cannot be used for cauterising the cervical cavity, for removing an excrescence, for scarifications, nor for deep

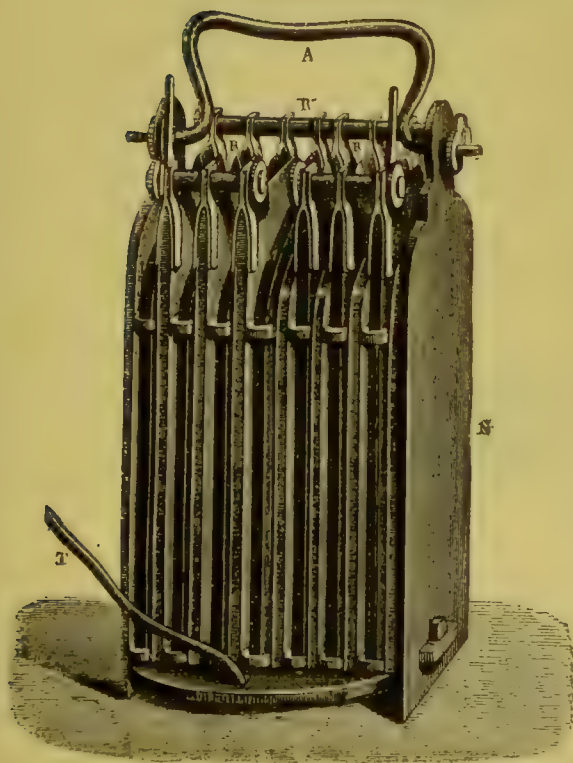


FIG. 195.

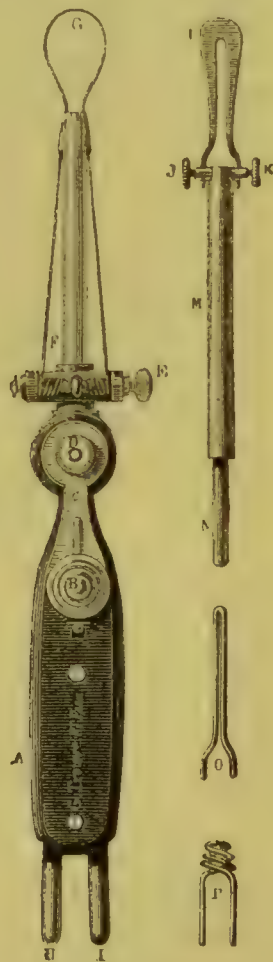


FIG. 196.

FIG. 196.—Galvano-thermo-caustic battery.

FIG. 197.—G, platinum bistoury; L, cautery in form of a knife; P, conical cautery; O, cylindrical cautery.

ignipunctures, which in my opinion are the most useful application that can be made of the actual cautery to the uterus.

The *galvanic cautery* is applied by means of a galvano-caustic handle or knife, and has been popularised by Middeldorpf. Electrolysis has been recommended by Ciniselli and adopted by some surgeons, who consider it very valuable; they believe that in performing a section by means of the negative pole around which the alkaline elements arrange themselves, the scar will be soft, and the subsequent cicatrix non-retractile (which remains to be proved; in my opinion cicatricial tissue is always cicatricial tissue, *i.e.* retractile). The difficulty of keeping galvanic and electrical apparatus in order will always prevent their coming into general use.

Paquelin's *thermo-cautery* has not the same drawbacks. At my request Collin has succeeded in making spear-shaped cauteries, some curved others conical, but as yet he has not been able to make any sufficiently pointed to serve for ignipuncture of the cervix. This apparatus though much simpler than electrical machines requires considerably more attention than the eolipyle lamp. Therefore this lamp and the ordinary cauteries seem to me preferable to all other instruments for cauterising the uterus.

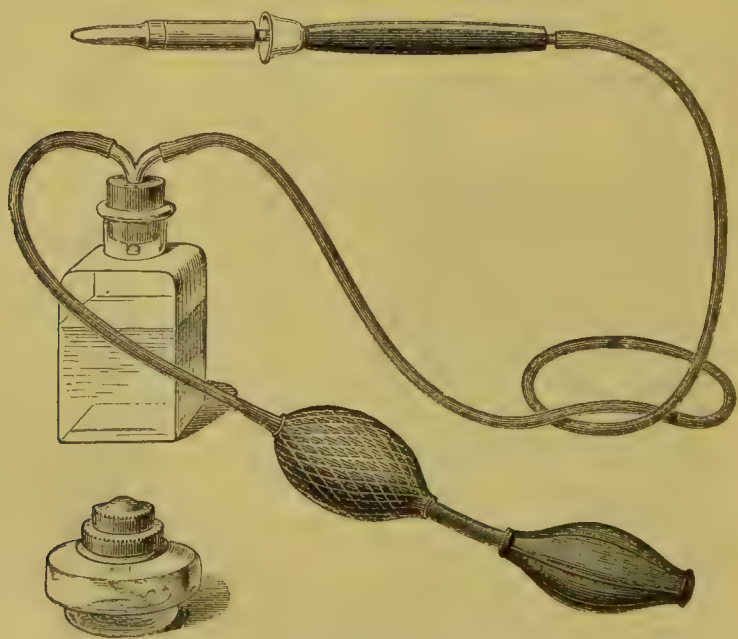


FIG. 197.—Paquelin's thermo-cautery.

To understand the harmlessness of the actual cautery when applied to the uterus with the precautions indicated, we must remember that the fibro-plastic nature of the tissue, the tendency to hypertrophy, the remarkable facility with which the mucous membrane of the uterus is renewed, this instability of a tissue which I have described as being constantly in process of organisation, must greatly facilitate the process of repair in an organ like the uterus, when destruction has only

extended to a small part of its mucous membrane, and especially when this destruction has been limited to pathological excrescences. Not only is cauterisation of the uterus not invariably followed by the formation of a cicatrix, but the cauterised cervix which previously was hard becomes soft. There must, therefore, have been a work of absorption going on, perhaps the production of new elements; but not, strictly speaking, the formation of cicatricial tissue. There is frequently even partial renovation of the mucous membrane. The orifice is the only part we must always treat carefully.

Only a short time since I had a new proof of the wonderful facility with which repair of the uterine tissue takes place. It was a chronic case of complete inversion of the womb; reduction was impossible, and it seemed to me that the only indication was the ablation or destruction of the organ by the actual cautery. The ordinary cauteries seeming to me insufficient, I had one made expressly of a large piece of iron, forming therefore a much larger reservoir of heat than our largest cauteries, and slightly excavated on the surface so as to mould itself to the convexity of the uterus. I applied it at white heat to the mucous membrane, leaving it long enough to lead me to hope I had effected destruction; but with the exception of a very limited spot, the whole of the mucous membrane resisted, or rather was renewed so effectively, that after making fourteen cauterisations (which were much more painful than those of the cervix) I had to renounce further attempts. In proportion as the scar was detached healthy granulations appeared underneath, and after a few weeks I found the surface covered, not with hard and retractile cicatricial tissue, but with a soft membrane resembling the mucous membrane of the uterus in appearance. It is certain that the red hot iron does not produce so deep a scar as one would think, nor as that caused by chloride of zinc. The rapid drying of the surface prevents the action of the fire from extending, so that the tissues underneath are modified rather than destroyed.

I only know one contra-indication to the use of the cautery, whether actual or by caustics, and that is the existence of inflammation, and especially of peri-uterine inflammation. I cannot repeat the caution too frequently that it is very imprudent to cauterise, especially internally, in cases of parenchymatous metritis, and even of inflammation of the mucous membrane, a disease all the more dangerous because it may simulate a simple catarrh or be coincident with it, and pass unperceived in a superficial examination. In order to arrive at a correct diagnosis we must have recourse to inspection, touch and the uterine sound; for cauterisation performed in such circumstances has led to serious suppuration in the uterus and its appendages ending in death.

At present I am attending a patient suffering from serious uterine and peri-uterine inflammation, developed after an inopportune cauterisation, made, however, by a French surgeon who justly enjoys a great reputation. I am convinced, from knowledge of the special antecedents of this patient, that the inflammation existed before cau-

terisation, that it passed unnoticed because the patient was only examined with the speculum unaided by touch and palpation, and that it was deplorably aggravated by the operation.

The scar generally falls between the tenth and fifteenth day. *Cicatrisation should be hastened*, and therefore, besides continuing the general treatment of baths, irrigations, and (when indicated) astringent and detersive injections, medicated applications should be made to the cervix at variable intervals. I may mention the following as particularly useful: laudanum, when all that is necessary is to promote the natural tendency of the wound towards cicatrisation; the solution of nitrate of silver, when it is desirable to stimulate the healthy granulations; basic peroxychloride of iron,¹ when the wound has a tendency to bleed, and when vascular fungous growths seem ready to reappear on the surface; the concentrated aqueous solution of tannin, or even the crayons of tannin invented by Becquerel, for a lesion not extending beyond the cervical cavity, when the catarrhal condition and aqueous infiltration seem to have caused the development of granulations (I have a case of slight catarrhal granulations where the application of these crayons sufficed to effect a cure); iodoform and the tincture of iodine, when the engorgement of the cervix and the size of the granulations seem to indicate a scrofulous diathesis; the tincture of iodine and the perchloride of iron, when the mucous secretion is very abundant, or when the wound is pale or diphtheritic, and requires to be stimulated or modified, or when it threatens to bleed, &c.

3. *The cauterisation of the uterine cavity is performed in a different way.* Everything here contra-indicates the use of energetic caustics; liquid or solid caustics cannot be blindly applied to diseased parts without risk of causing great injury; the red-hot iron must not on any account be used, it would burn the orifices and the cervical walls before reaching the part requiring cauterisation; and yet we cannot doubt the existence of fungosities and granulations on the mucous membrane of the body, less frequently, but still as decidedly, as on that of the neck; nor can we deny that the means which succeed best in the treatment of these diseases would be applicable to the mucous membrane of the body as well as



FIG. 198.
Two graduated uterine sounds of different calibre.

¹ *Montpellier médical*, 1858.

to that of the neck. Leucorrhœa itself, a morbid condition of the glands of this mucous membrane, seems to require the intervention of active applications. Might we not hope that astringents, cathartics, caustics would effectually help the action of general treatment as well as in analogous diseases of the vagina and cervix? This conviction has suggested the idea of applying liquid modifications and even caustics by means of injections.

The *intra-uterine injections* practised by Mélier, Vidal (of Cassis),¹ Scanzoni and Aran, and met with disapproval by Hourmann, Nonat, &c., must be ranged among the most energetic means of modifying the tissues, but also the most dangerous that can be employed, if not practised according to the rules about to be laid down.

We must begin by cleaning the uterine cavity from the mucus which covers it, either by injections of pure water, or by painting it

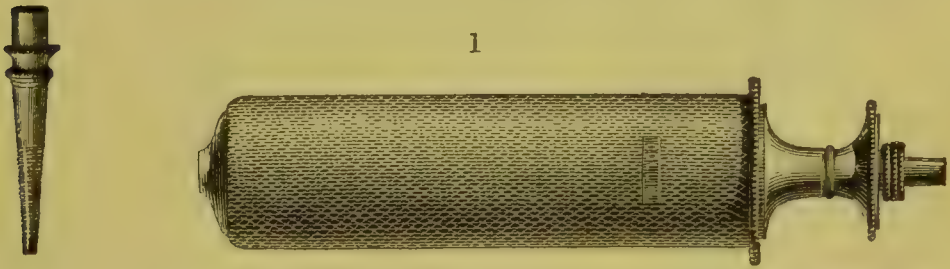


FIG. 199.—Canula on which a fine india-rubber sound may be screwed, and which is fixed at the other end to the small injection syringe.

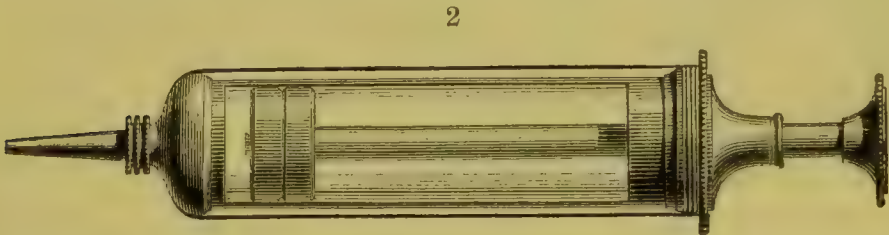


FIG. 200.—Small graduated syringe for making uterine injections. 1, syringe in its metal case, the canula enclosed in the stem of the piston; 2, syringe ready for use, which may be fitted to the metal sound or to a gum-elastic sound by means of the canula.

with yolk of egg to form an emulsion with the mucus and thus to expel it more easily. Then a caustic injection is made. The use of the uterine sound greatly facilitates the operation. Whether we use a fine india-rubber sound introduced by means of a wire in the interior, which is withdrawn immediately afterwards, or a hollow uterine sound made after the model of Simpson's, it is in any case useless to have one with a double canula, as the liquid should be able to flow back round about the sound, which ought to move freely in the orifice. As for the instrument of propulsion, whether the india-rubber bag of Hardy (of Dublin) be used, or the graduated syringe which Collin has made at my request, the process is the same, and consists in first introducing the sound, then adjusting the syringe to its extremity and

¹ *Essais sur le traitement méthodique des maladies utérines.* Paris, 1840.

propelling the liquid very slowly, so as not to distend the cavity of the uterus, lest the sound by filling the orifice should prevent the free return of the liquid into the speculum. The speculum is always indispensable when a caustic liquid is used, to prevent the cauterisation of the vagina by the liquid as it issues from the uterus.

Nothing could be simpler or more efficacious than these injections if the susceptibility of the mucous membrane, the narrowness of the cervico-uterine canal, and the permeability of the Fallopian tubes were not the source of dangers, all the greater that they are sometimes not foreseen, and that the greatest skill and prudence have not always succeeded in preventing them.¹ As for myself, I have often made these injections without any bad result; but although I have never had occasion to deplore the death of a patient, I have sometimes seen the instantaneous occurrence of such formidable accidents after injections, that I have resolved never to make another caustic injection, or even one of simple water, unless *assured of a free passage through the cervico-uterine orifice*, allowing of the easy reflux of the liquid into the vagina as soon as it has filled the uterine cavity. In this case there is nothing to fear. We may, therefore, without misgiving follow this rule: *to make an injection into the uterus when the orifice is sufficiently wide to allow the excess of liquid to flow back through the cervix*; in all other cases to abstain from this mode of treatment.² This operation, moreover, must only be performed in the middle of the intermenstrual period.

The liquids used are: simple water, solutions of tannin, alum, sulphate of zinc, nitrate of silver, acid nitrate of mercury, tincture of iodine, perchloride of iron, and even of chloride of zinc.

I must, however, repeat that every liquid caustic may become dangerous: (1) because it touches all parts of the mucous membrane, and so may cause too extensive a destruction, or excite an irritation in the mucous membrane, followed by inflammation dangerous in itself, and which may spread to the mucous membrane of the Fallopian tubes and to the peritoneum; (2) because the uterine cavity is so small that all the liquid may not flow back by the orifice, and, even when it can return freely, part of it may penetrate the orifice of the Fallopian tube and cause fatal inflammation. Therefore I restrict intra-uterine injections, in those rare cases which absolutely require them, to simple water used as a lotion, or to a very small quantity of cathartic rather than caustic liquid:—tincture of iodine, perchloride of iron, nitrate of silver, beginning with a very weak solution and increasing very gradually; and I never make them when there is any cause to fear that, owing to a flexion, a deviation of the cervico-uterine canal, a constriction of the orifice, or any other obstacle, the liquid injected cannot return easily from the uterine cavity into the vagina. This is no doubt

¹ Næggerath has related a case of death resulting from caustic injections into the uterus (*New York Journal of Medicine and Gazette méd de Paris*, 1861, p. 190).

² Gantillon, *du Catarrhe utérin*. Thèse de Paris, 1868. Guyot, *des Injections intra-utérines*. Thèse de Paris, 1868.

equivalent to a half condemnation. In fact, I hardly ever perform this little operation since I recognised its attendant dangers, and especially since I ascertained the entire freedom from injurious results of the introduction into the cavity of the uterus of a small quantity of solid or pulverised nitrate of silver. There are, however, cases of obstinate hæmorrhage and abundant leucorrhœa, where injections of tannin, iodine, &c., have been of great use.

Intra-uterine cauterisation ought only to be practised with nitrate of silver. Any other caustic seems to me dangerous, except in cases of serious alteration with suspicious vegetation of the whole mucous surface, when nitric or chromic acid, in solutions of varying strength, or even chloride of zinc may be indicated.

Nitrate of silver may be applied to the uterine cavity in various ways. It may be introduced by a brush dipped in a concentrated solution of the caustic, or the wet brush may be rolled in powdered nitrate of silver, or a sponge tent may be covered with wax and rolled in the powder, according to Gillespie's plan (*Lyon médical*, 20 août, 1871). We may even with the brush, which presents none of the dangers of injections, apply other caustics, such as the aqueous solution of tincture of iodine, perchloride of iron, and even chloride of zinc, as I have done several times.

The mode I adopt is as follows: I commence by introducing the sound into the cavity so as to learn the direction to be given to the instrument, taking care always not to cause hæmorrhage. Immediately after withdrawing it I insert a fine camel's-hair brush, mounted on a long handle and soaked in a strong solution of nitrate of silver, or rolled in the powder, and repeat the application a second and even a third time if the os internum remains sufficiently open to allow of it. Whilst this is being done I fix the cervix by means of the converging tenaculum hook forceps. In most cases this application repeated once a month three or four times is quite sufficient to produce the desired effect; but in some rare cases, where a more powerful action is



FIG. 201.—Cauterisation of the uterine cavity by means of a brush.

necessary, it has been suggested that the crayon should be introduced and applied to the mucous membrane lining the cavity in the same way as to ulcers of the cervix, or to the proud flesh of an external wound. Till lately, however, practitioners feared the danger that might be incurred by a fragment of the caustic being broken off and remaining in the womb. Having assured myself not only of the harmlessness, but even of the good results consequent on this accident, and having considered the advantages which might accrue from leaving a fragment of nitrate in the cavity of the womb provided its use was indicated, and that precautions were taken to avoid troublesome consequences, I have not hesitated to try this means of cure for obstinate leucorrhœa and fungous growths. Experience has answered my expectations in the most satisfactory way, and at present the introduc-



FIG. 202.—Uterine caustic-holder. *a*, sound; *b*, stilet.



FIG. 203.—Extremity of different uterine caustic-holders. 1, large sound with two large orifices for ointment; 2, 3, smaller sounds for passing solid or pulverulent caustics into the uterus.

tion of nitrate of silver into the uterus is not only one of the little operations which I perform as frequently as cauterisation of the cervix or of the cervical cavity, but it is a recognised application in gynecological therapeutics. I perform it in the following way: I choose a crayon of varying length, according to the size of fragment I intend to leave in the uterus; generally a very small crayon is sufficient. I

round and point the extremity, rolling it between the fingers in a piece of coarse wet linen, so as to facilitate its introduction; then I fix it in an ordinary platinum caustic-holder with a long handle, or seize it with the uterine forceps, or place it in the end of Braun's sound. After having introduced the sound in order to learn the direction of the cervico-uterine canal, but very gently so as to avoid causing spasmodic contractions of the orifice, I apply the crayon to the uterine cavity; then, in place of trying to withdraw it intact, I try to push it in by partly opening the forceps, or to break it by inclining the caustic-holder abruptly, or I thrust it in by means of the gutta-percha sound invented by Braun of Vienna¹ for this purpose; immediately afterwards I introduce into the vagina a large tampon, soaked in salt water, so as to neutralise the nitrate of silver which, as it dissolves, issues from the uterine cavity, and to protect the vagina and cervix. I keep this plug in place by a larger dry one, and then withdraw the speculum. In addition to these the same precautions are taken to prevent the development of inflammation as are used after the actual cautery.

I may say that I do not know a more heroic means of treatment than leaving a fragment of crayon in the uterine cavity in those cases of large fungous granulations for which Récamier invented his curette, and above all in cases of chronic and obstinate leucorrhœa, which cause despair to patients and physicians alike. It seldom happens that this little operation is required a second time.

I have never seen serious accidents follow this mode of treatment. The cauterisation of the vagina is prevented by the introduction of the plug soaked in salt water; inflammation of the uterus or of its mucous membrane by baths, vaginal irrigations and absolute rest; and pain, spasm or nervous erethism, which are the most common accidents, by an antispasmodic draught or an opiate enema.

I have only once seen excruciating pain alleviated neither by baths, antispasmodics, nor narcotics. It was owing to expulsive efforts and uterine contractions produced by a considerable swelling of the cervix which caused a temporary occlusion of its orifice. This morbid condition, which prevented the expulsion of the mucus abundantly secreted under the irritating influence of the nitrate of silver, being the sole cause of these pains, a cause purely mechanical, I incised the cervix a few hours after the operation to facilitate the expulsion of the mucus, as well as of the nitrate of silver itself. The symptoms ceased immediately, and the good effects of the cauterisation were produced all the same. In all my other cases, the pain, which has occurred more frequently than after cauterisation of the cervix, and which has sometimes been severe, has always yielded to general and local antispasmodics, and to baths associated with continuous vaginal irrigation.

Besides, if the nitrate is only left in the uterine cavity when the

¹ Since then a year never passes without a new instrument being invented for precipitating a fragment of nitrate of silver into the uterus, which is the best refutation of the objections made to my method, *i.e.* before having tried it experimentally.

orifices are gaping, the mucus, which is abundantly secreted immediately after the operation, is easily expelled under the influence of uterine contractions, and it rarely happens that these contractions are painful. Sometimes the orifices are so patent that the crayon is expelled with the mucus. As it is not always necessary to introduce a large fragment, I often use ordinary open sounds furnished with a piston for propelling a small bit of nitrate, or simply the powder or an ointment.

The contra-indications to this little operation are very clear. The first and most absolute is the existence of an inflammatory state of the uterine system. This rule alone would prevent many accidents. Another important contra-indication is never to leave the crayon in the uterine cavity when the secretions would have any difficulty in escaping. Consequently I never do so in cases of flexion, deviation of the uterine canal, or constriction of the orifices.

I must now explain what takes place through the agency of this mode of cauterisation, and also account for its innocuity. The chief cause of its harmlessness is that the mucous membrane of the womb does not experience the direct and immediate action of the caustic. In fact the nitrate of silver cannot be brought into immediate contact with the mucous membrane, nor can it produce an energetic cauterisation on any part of it. The presence of the crayon causes hypersecretion of mucus, which protects the membrane, the crayon being enveloped with the mucus which coagulates around it from the first; afterwards it is only through this envelope that an exchange can be effected between the caustic and the secretions of the uterine cavity. We know this from seeing the crayon as it escapes seven or eight days afterwards, or rather its form, for it is strangely altered, decomposed, softened and foliated. It is evident that it has been greatly modified by its sojourn in the uterine cavity; it is evident also that it has not dissolved as it would have done in a glass of water. A series of successive exchanges have been made between the elements of which it is composed and those of the mucus secreted by the membrane lining the uterus. The impression, therefore, made on the organ by the caustic must have been very gradual. This action differs, without doubt, from cauterisation properly so called; we can understand also that, if some parts are more affected than others, it must be the superficial ones, the granulations, the exuberant fungosities, the hypertrophied follicles. In short, we can understand that this modification of the uterine cavity is preferable to that produced by injections which penetrate further, reaching all the recesses of the mucous membrane, even of the Fallopian tubes, and presenting dangers the existence of which is proved both by experience and theory.

4. Récamier's uterine curette is a metallic stem in steel, twelve inches in length, of the thickness of an ordinary goose quill, cylindrical in the middle, presenting at each of its extremities a curve, which allows of its being more easily adapted to the axis and direction of the uterus. Its curves are disposed inversely with regard to each other. Their concave sides are excavated in deep grooves of unequal length, the

edges of which, although blunt, are very fine, like those of a rasp, and capable of removing exuberances of the mucous membrane by friction. After introducing the instrument into the uterine cavity



FIG. 204.



FIG. 205.



FIG. 206.

FIG. 204.—Récamier's uterine curette.

FIG. 205.—Sims's curette, effecting abrasion by the external border. I have had one made which abrades with the internal border.

FIG. 206.—Button-hook curette, differing from the other two in not being closed, so that it can be used for the removal of a polypoid excrescence. The stems of these instruments not being tempered, they can be inclined to suit the direction of the cervico-uterine canal.

Récamier used to impart to it light movements of circumduction as well as in a vertical direction, so as to explore successively every part of the mucous membrane. If he found that some points were especially exuberant, he scraped the mucous membrane with one edge of the groove, and when both of the walls seemed sufficiently smooth he withdrew the instrument, taking care to turn the groove upwards, so as to bring away the fungosities just abraded. I have often in this manner extracted fungosities, which were the only cause

of metrorrhagia which ceased after abrasion by the curette. Récamier sometimes repeated the operation several times at intervals of a few days. Each scraping was followed by cauterisation with nitrate of silver and bathing of the uterine cavity.

This operation has been severely criticised by some and too much praised by others. To say that Marjolin, Robert, Trousseau, Nélaton, Maissonneuve, Nonat, &c., have practised it several times with success is a sufficient justification of the use of the curette. When there are no fungosities it cannot do very great harm to pass the curette lightly over the mucous membrane, and when there are it alone can remove them quickly and surely. It is, therefore, undoubtedly of great value. I specially recommend its use for the abrasion of a little polypus or fungosity clearly diagnosed by means of the sound. In such a case it may be necessary to have recourse to Sims's curette, which is broad, or to mine, which I have left open on one side in the form of a button hook.

It cannot be denied that in cases of softening of the uterine tissue the curette may have produced perforations which, though cured in some cases, have in others had a fatal result. The danger of this accident, which is very rare and always easy to avoid, ought always

to be present to the mind of the surgeon, who will use every precaution and even abstain from abrasion in all cases where flexion of the uterus or softening of its tissue would facilitate the penetration of the curette through the uterine walls.

5. Simpson's *intra-uterine dry cupping instrument* is a hollow sound perforated with holes at the terminal extremity, whilst the other end is screwed on to a little aspirating pump, by means of which a vacuum can be made. The diameter of the sound is sufficient to fill the cervico-uterine orifice when the rounded extremity is in the cavity of the womb. In proportion as a vacuum is made in the body of the pump a kind of aspiration is exercised on the uterine mucous membrane which comes in contact with the little openings of the sound. After repeating this application several days running, at the time when the catamenia ought to appear, there is a flow of blood towards the mucous membrane, and at last there may be a little oozing of blood from it.

Simpson used to have recourse to this little operation for amenorrhœa, but it has not been adopted by the profession. It is a complement of the introduction of the galvanic stem and of the dilatation of the orifice by stem pessaries of gradually increasing diameter.

B. *Special operations.*—The operations which remain to be mentioned are so entirely special that the description of them cannot well be separated from the history of the diseases for which they are indi-



FIG. 207.

Intra - uterine
sound for dry-
cupping the ute-
rus (Simpson).

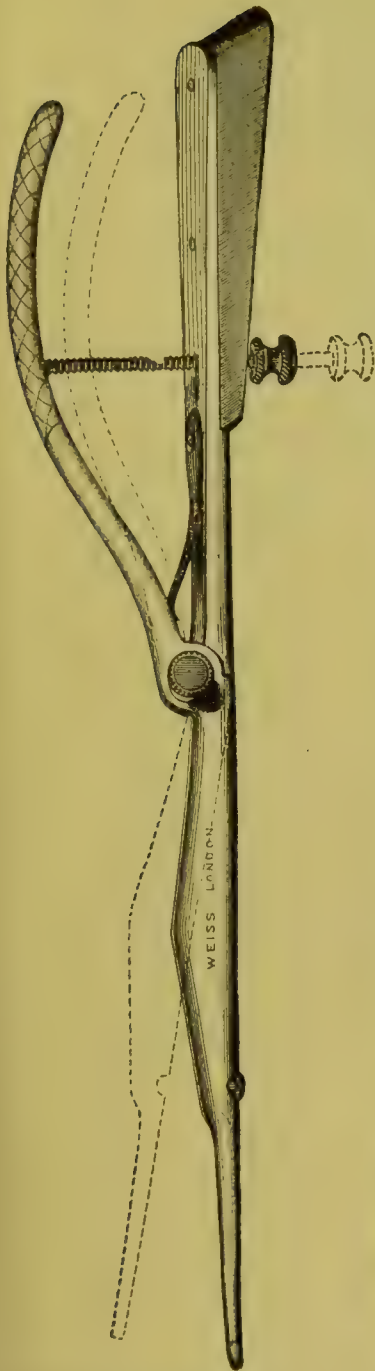


FIG. 208.—Simpson's simple hysterotome.

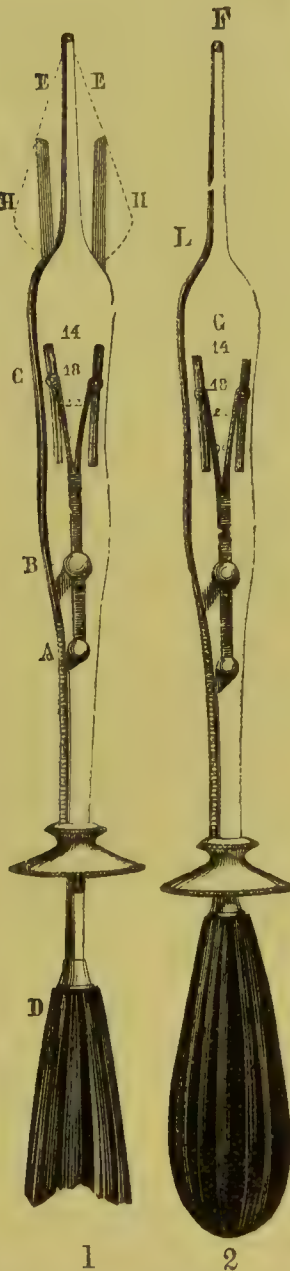


FIG. 209.—Mathieu's double hysterotome. 1, open; 2, shut.

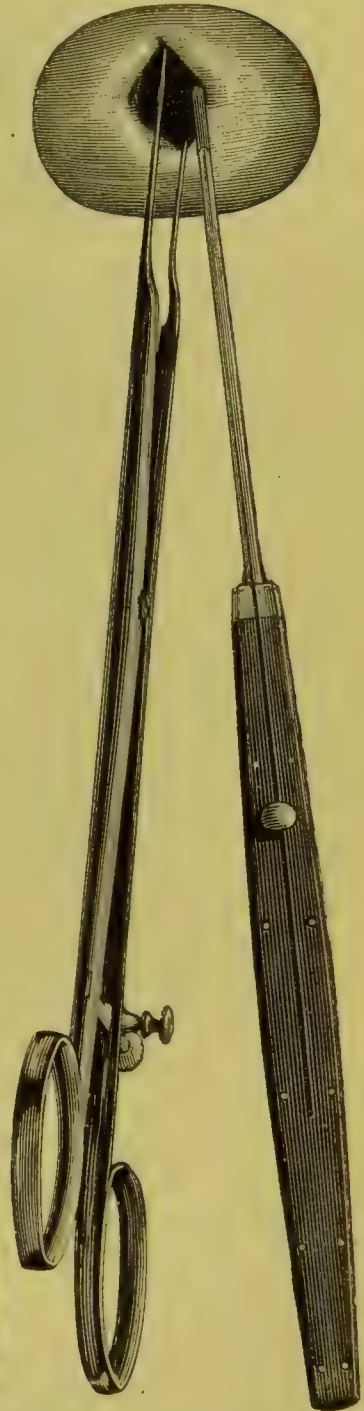


FIG. 210.—Division of the os externum with the blunt-pointed concealed bistoury and divergent tenaculum hook forceps.

cated. Some of them, though offering no apparent difficulty, and though devoid of all real gravity, are not on that account unaccompanied by dangers, occurring either from ignorance of the exact anatomical knowledge required, or from induced hæmorrhage, or even from serious

accidents consequent upon them, such as the putrefaction of pus, the entrance of air into a purulent or sanguineous centre, the decomposition of liquids contained therein and the purulent or putrid absorption which may be one of these consequences. Others take their place among the most serious operations of surgical art, and necessitate special knowledge as well as an experienced hand and a mind familiar with all the accidents and all the resources of general surgery.

6. Amongst the first class we may include *division* of the cervical orifices; *perforation* of the hymen, vagina or uterus, in cases of atresia of these organs; *puncture* of peri-uterine, uterine, or ovarian tumours, whether by the vagina or the abdomen; *injections* of various kinds into centres, the contents of which have previously been evacuated.

The division of the cervical orifices indicated in cases of constriction, of mechanical and even of membranous dysmenorrhœa, sterility, or even of intra-uterine tumour (to facilitate means of access), is performed by means of simple instruments such as scissors, bistouries, sharp- or probe-pointed, with a director, &c., as on any other part of the body, with this difference that these instruments must be long enough to reach the uterus. Sometimes it is more convenient to use special instruments or hysterotomes, the concealed blades of which are made to spring out from their sheath when required. They may be either single or double-bladed like lithotomy knives, which they resemble in this respect. The simple hysterotome invented by Simpson is one of the most useful. Those which are double-bladed are preferable in some circumstances, owing to the rapidity with which they allow of the operation being performed. Or short-bladed straight scissors may be used. Küchenmeister has invented a pair, the external blade of which is furnished with a point which fixes it firmly in the uterine tissue; others have blades with teeth like a saw to prevent hæmorrhage. As for myself, I prefer fixing the cervix by means of diverging tenaculum hook forceps introduced into its cavity and stretching the os so as to facilitate its incision to the required depth by a simple bistoury with a fine concealed blade, like that of Blandin. Sometimes simple division is not enough, it being impossible to preserve a sufficiently large opening without really performing autoplasty of the orifice. There is a great difference between division of the os externum and the os internum as regards the gravity of the operation. In performing the last great care must be taken not to pass beyond the uterine tissue. My reason for preferring the simple tenotomy knife or Simpson's hysterotome to the double-bladed one is that I generally make a superficial incision, dilating afterwards with sponge tents. It should always be remembered that this operation must never be performed at the menstrual period, or even within a week of the time.

I shall simply refer, as a means of treatment, to dilatation of the cervix by bougies, stem pessaries, sponge tents, or other dilating bodies, about which I have already spoken in detail as means of diagnosis.

Punctures are generally made with trocars of various forms, straight or bent, and of different sizes, from the exploratory trocar intended for capillary punctures in supposed abscesses of the Fallopian tube or peri-uterine abscesses to the large one with which an ovarian cyst is punctured, especially in ovariectomy, in order to hasten and facilitate the escape of the thick fluid often contained in it. These different kinds of trocars, as well as the apparatus annexed to them either for increasing the orifice in cases of hæmatocele or retro-uterine abscess or for retaining the walls of the cyst and preventing effusion of the fluid into the peritoneum during ovariectomy, will be described with each of these diseases and the operations which they necessitate.

Deep injections, generally more injurious than useful unless simply detersive, are made into the various peri-uterine centres or into ovarian cysts, as into every other enclosed cavity, by means of a syringe fitted on to the canula of a trocar. I have sometimes been able with great advantage to substitute for these injections real lotions made with a double canula sound to which a small hydroclyse has been fixed.

7. The second class of these special operations comprises *autoplasty* and the more or less serious operations necessitated by the partial or total absence of the vulvo-uterine canal, the *excision* or amputation of the cervix, the *ablation of polypi* by ligature or bistoury, the *reduction of displacements*, the *taxis for the reduction of uterine inversion*, the *extirpation of pediculated or interstitial fibromata*, and, lastly, *amputation of the ovary and of the uterus*—an operation revived in our times with great success.

The operations necessitated by extensive vaginal imperforations or obliterations are very serious, their success being very variable and depending on the conditions under which they are performed. Their great difficulty arises from the necessity of performing *autoplasty* of a canal without having a sufficient extent of mucous membrane. Hence the danger of encroaching on neighbouring organs (bladder or rectum) whilst making a way by incision, dilatation, tearing, &c., in the narrow space which separates them. Hence also the imperfection of the results obtained, owing to the impossibility of lining the new canal with true mucous membrane, at least to the extent required, whilst almost all the benefit of the operation is lost owing to the formation of retractile cicatricial tissue.

Amputation of the cervix, indicated in cases of conicity, elongated hypertrophy, or incurable organic alteration of this segment of the uterus, is performed by means of long curved bistouries or scissors while the organ is pulled down; in cases of hypertrophy of the supra-vaginal portion a long and troublesome dissection is required, necessitating great precautions against hæmorrhage. Consequently it is better, as a rule, to perform the operation with the thermo-cautery.

The same remarks are applicable to the removal of polypi. To the methods already mentioned we may add avulsion and torsion for small vascular tumours, and the ligature, especially the elastic ligature, used as in former times to effect strangulation and slow detachment by

sloughing. Later on we shall consider the respective indications for these different methods.

The reduction of chronic uterine inversion and the extirpation of the tumour are operations of the most serious description, but fortunately are very seldom necessary.

The extirpation of fibromata, although easy when the tumours are small, presents great difficulties in the contrary case, and has led to the invention of a most ingenious method of operation, consisting in the division of the tumour *in situ*, and the extraction of it in fragments. These extractions necessitate long forceps furnished with claws and instruments of prehension of various kinds, in the fabrication of which great perfection has been attained during the last few years. The increase in size of fibrous myomata may be an indication for the partial or total extirpation of the uterus by abdominal section.

Lastly comes ovariectomy, the most serious of all these operations, so serious that it has not yet been generally adopted. The minute details necessary and the various rules laid down by the enterprising minds who have most frequently performed this conquest of modern surgery must be reserved till we come to the description of ovarian cysts and serious alterations of the uterus.

GYNECOLOGICAL APPARATUS

My pupils have very frequently asked me to furnish a list of the instruments most necessary for examining women affected with uterine diseases, for making the applications and performing the various operations which these diseases may necessitate. Now the instruments which serve in diagnosing diseases of women have the exceptional advantage pointed out by Barnes, viz. that of serving for treatment as well as for diagnosis. I divide gynecological instruments into three categories: 1. Those which the gynecologist ought always to have with him, *i.e.* those that are necessary for examination, for applications, and even for unforeseen and extemporaneous performance of small operations. 2. Those which are often employed, but the use for which is neither unforeseen nor indispensable. 3. Lastly, those intended for performing more important operations, whether on the genital organs or on other parts of the body.

The first class alone constitutes the gynecologist's apparatus. The second forms what I may call the special arsenal of the gynecologist. The third is what the gynecologist borrows from general surgery.

1.—THE GYNECOLOGIST'S APPARATUS

1. Two sizes of Sims's speculum as modified by Courty, *i.e.* two blades with handles made to screw off and on. They have this great advantage, that they suffice for any ordinary diagnosis or application, whilst any other may possibly be useless owing to the narrowness of the vagina, the abnormal direction of the cervix, the presence of a tumour, &c.

2. One or two pairs of Courty's dressing forceps (one pair straight, one curved) with short blades and blunt points, equally suitable for making applications, seizing the pedicle of a tumour, holding a needle, a piece of sponge, &c.

3. A female catheter, and by preference a sigmoid catheter.

4. A uterine sound made to slide into its handle.

5. Two silver sounds perforated at the point, the other end being made to fit into a syringe.

6. Two fine india-rubber sounds of small calibre, also made to fit on to the syringe by means of a conical canula with a screw.

7. Blandin's long-bladed concealed bistoury.

8. Three pairs of long scissors with short pointed blades; one pair straight, another curved, the third elbowed.

9. Convergent and sliding tenaculum hook forceps.

10. Divergent tenaculum hook forceps with catch.

11. Two fine camel's hair brushes on long handles.

12. Two long canulas with movable piston, one an intra-uterine solid caustic holder, the other an ointment holder like those of Braun and Barnes.

13. Two of Récamier's curettes, one narrow, one broad.

14. A small syringe for intra-uterine injections fitting on to the sounds.

15. A larger syringe for washing the cavity of the uterus before and after cauterisation.

To this list of instruments I will add a short one of medicaments which the gynecologist will find it useful to have beside him;—cold cream, glycerine, laudanum, tincture of iodine, perchloride of iron, a nitrate of silver point in a glass tube, powdered nitrate of silver in a glass stoppered bottle, chloride of zinc in crystals in a similar bottle, canquoin plaster, Friar Come's red arsenical powder. I need not say that I have only mentioned the most necessary, passing over a very large number of most useful drugs, such as chlorate of potash, alum, tannin, &c.

2.—THE GYNECOLOGIST'S SPECIAL ARSENAL

1. Collin's reflecting lamp with refracting glass.

2. The two large blades of my speculum.

3. Two of the same in wood, to be used when the potential or actual cautery is applied.

4. Cusco's folding bivalve speculum.

5. Three sizes of Ferguson's glass speculum.

6. Eolipyle spirit lamp with stand for cauteries.

7. Four cauteries for ignipuncture, the points and bulbs of varying sizes.

8. Three spear-shaped cauteries, one straight, the others more or less curved; and one very narrow in the form of a knife.

9. Six prepared sponge tents of different sizes.

10. Four Courty's galvanic stem pessaries, different sizes.

11. Sims's bistoury with reversible blade.

12. Three of Startin's hollow needles, one straight, one curved in the axis, and a third (Courty's) curved perpendicularly to the axis like that of Deschamps, all furnished with Mathieu's threader.

13. Long but fine forceps with short claws and catch, straight and elbowed.

14. Two long fine tenaculum hooks with handles, one single the other double.

15. A long blunt hook.

16. Two curettes, cutting the one on the convex (Sims's), the other on the concave side (Courty's).

17. A curette in the form of a button-hook (Courty).

18. A long and fine *serre-nœud* for extemporaneous ligature, and one very small for vascular tumours of the urethra.

19. Gooch's canula as modified by Courty.

20. Naudinat's large size *hydroclyse*, with straight tubes varying in length and thickness.

21. A supply of iron wire, silver wire, waxed thread, fine whipcord, india-rubber thread, fine india-rubber tubing, cotton wool, &c.

3.—INSTRUMENTS COMMON TO THE GYNÉCOLOGIST AND THE GENERAL SURGEON.

1. A set of bistouries with long handles and short blades, pointed or blunt, straight, curved on the flat, or elbowed at the level of the blade.

2. MacClintock's corkscrew or vice for removing polypi; Aveling's polyptribe; Simpson's polypotome.

3. Very strong single or double tenaculum hooks open or concealed.

4. Chassaignac's radiating, convergent, or divergent tenaculum hooks. Courty's semi-tenaculum hooks of the same make.

5. Strong polypus forceps, straight or curved, with lock.

6. Museux's strong tenaculum hook forceps, some very concave, for seizing strong tumours (Robert's pattern), others sliding (Greenhalgh's), others concealed, and springing out when required (Collin, Mathieu, &c.).

7. Box of instruments for vesico-vaginal and recto-vaginal fistulæ.

8. Ovariectomy box.

9. Straight and curved *écraseur*, furnished with Emmet's adjustor or Aubry's metallic thread for holding the chain.

10. Paquelin's thermo-cautery, with Courty's ignipunctor and curved knife.

11. Galvano-cautery, with wire and electric battery.

CHAPTER III

GENERAL CHARACTERISTICS OF UTERINE DISEASES—THEIR FREQUENCY —PREDISPOSING CAUSES—GENERAL AND LOCAL SYMPTOMS—COM- PLICATIONS—PROGNOSIS—CLASSIFICATION.

HITHERTO I have only considered *the characteristics of uterine diseases* with regard to diagnosis and therapeutic indications. Now I shall endeavour, by considering them in groups, as they sometimes occur naturally, to give, not perhaps a more exact, but a more complete view of them, showing their special characteristics, and considering the degree and elements of their curability; in short, pointing out the various forms they may assume, the natural divisions into which they may be classified, and the relative frequency and importance occupied by each of them.

1. The first characteristic of uterine diseases is *their frequency*. I have already refuted the opinion of those who assert that they were less frequent formerly than now. I have shown how it was that they escaped the notice of the ancients. Is it necessary to explain why we, with our means of exploration, encounter them so often? Could it be otherwise with an organ which everything seems to have conspired to make the point towards which all morbid phenomena naturally tend and the starting-point of almost all constitutional disorders. Its position exposes the uterus to constant pressure from the weight of the abdominal viscera, whilst the accomplishment of its functions necessitates not only a hyperæmia like that produced in other organs but considerable and repeated sanguineous fluxions, serious nervous disturbance, complete change of tissue and more or less serious traumatism, in a word, the natural phenomena of menstruation, coitus, pregnancy, delivery; in short, the uterus reacts constantly on all the organism, and all the organism reacts on it: *propter solum uterum, mulier id est quod est*. Now that we know the physiological importance of the ovaries and how closely they are connected with the uterus we can apply the same adage to them, admitting an equal frequency in the occurrence of ovarian disease.

This frequency is so great that it often allows of our presuming the existence of uterine disease, which at the time may be only latent. When the cause of more or less serious general symptoms cannot be discovered, attention should be drawn to the genital economy and investigations should accordingly be made in that direction. By inquiring into the circumstances which have a more or less considerable share in the production of uterine diseases, we shall at the same time account for their frequency and recognise the character assumed by them in their development.

2. Many *predisposing causes* are known but very few *determining causes*. Uterine diseases are generally awakened by the slow and gradual changes produced in the vitality and structure of the organ under the latent and continuous influence of a diathesis; but we cannot always determine the causes which have originated them. After all, these are of no importance as far as treatment is concerned; whether they are due to a traumatism, to the effects of delivery or abortion, or to a reaction from some injurious impression, these are often only the accidental causes which may have put the match to the fire, but they have neither prepared it nor kept it up. Therefore, for all practical purposes, it is sufficient to consider the predisposing causes of these diseases, local as well as general.

The *predisposing local causes*, which depend on anatomical and physiological conditions peculiar to the uterus, explain not only the frequency of the diseases of this organ, but the relatively greater frequency of some of them, the favorite seat of others, &c. Thus the dependent situation of the uterus accounts for the frequency with which it is congested and engorged, as well as for the difficulty experienced in effecting a cure. The multiplicity of its means of suspension and the change which they undergo in the accomplishment of functions (pregnancy, delivery, &c.) are the natural causes of various displacements of the uterus and often of its engorgement. Its connections with the bladder, the rectum and the pelvis with the cellular tissue which fills it and the peritoneal folds lining it, explain the influence which may be exercised by these neighbouring organs on the uterus, and *vice versâ*.

The various phases of development dispose the uterus to disease in one part more than another. The precocious development of the cervix renders the cervical cavity liable to catarrh even before puberty. The later preponderance of the body explains the frequency of disease of this organ in the adult. Arrested development may suffice to cause a decided flexion, especially ante flexion, which is only the persistence of the foetal condition.

Even its structure involves a tendency in the organ to certain morbid conditions. The predominance of fibro-muscular tissue disposes the uterus to general or partial hypertrophy, to fibromata, polypi, &c. The richness of the vascular element and the activity of its circulation dispose it to acute or chronic inflammation, complete or partial, primitive or consecutive. The absence or rarity of cellular tissue explains the rarity of suppuration, apart from interstitial phlegmons, in the non-puerperal state. The ovary, containing more cellular tissue and an almost infinite number of little vesicles, destined to become Graafian vesicles, is on that account infinitely more liable than the uterus to be affected with suppuration, and to contain purulent, phlegmonous, or cystic cavities. The presence of a mucous membrane, rich in vessels and in glands, disposes the uterus to discharges and catarrhal affections. The mucous membrane of the cervix, and especially that of the os externum, like all other natural orifices, as Tyler Smith, Bernutz and others have pointed out, may be the special seat of various eruptions, herpetic,

syphilitic, ulcerous, &c. The serous peritoneal fold which covers the greater part of the external surface of the womb exposes this organ to serous inflammations and their consequences, gives to peri-uterine inflammation the special characteristics which often distinguish it, and is the frequent cause of the formation of adhesions and fibro-cellular bands between the different parts of the uterine system, between the ovaries and the Fallopian tubes, and between the Fallopian tubes and the uterus, &c., which suspend temporarily or definitively the accomplishment of their functions, dispose to phlegmons, or keep up the irritation which favours the persistence of inflammatory centres.

The continuity of the mucous membrane of the uterus and Fallopian tubes with the peritoneal serous membrane at the *ostium uterinum* tends to propagate the inflammation of this mucous membrane to the peritoneum, and consequently to increase the evil considerably. This propagation may take place, whether the inflammation be spontaneous or provoked, and this consideration ought to put us on our guard against the consequences which may result from caustic uterine injections, even where they do not penetrate into the peritoneal cavity.

The vascular activity of the uterine system, with the periodic fluxions which take place in it, expose the whole or various portions of this system to sudden and violent sanguineous fluxions, to consequent congestions, to hæmorrhages internal, external, interstitial or apoplectic; to hypertrophies, total, partial or histogenetic; to ovarian products, especially to the most frequent of all, multilocular cysts.

The periodic repetition of these fluxionary movements at the menstrual period and their return during pregnancy, as well as during uterine diseases, dispose the organ to fluxions, congestions, and to the pains resulting from this plethora of the vascular system, and lastly, to the persistence of these morbid states if critical evacuations do not take place.

It is at the climacteric especially that this state of uterine hyperæmia is developed as the result of persistent congestion unrelieved by any critical evacuations, and this condition not only constitutes a disease in itself, but may produce many kinds of diseases, especially of a diathetic nature.

Sexual relations have an undoubted influence on the development and perpetuation of uterine diseases. This influence, however, has been exaggerated; it is not responsible for all the diseases attributed to it. West, for example, seems to attribute to coition imperfectly performed an exaggerated influence on the development of certain uterine maladies. It is nevertheless certain that marital intercourse not only may produce disease but keep it up. As to the part which it may have in the production of disease, it is evident that excesses may determine permanent congestion, and may even develop complete or partial metritis, followed later by leucorrhœa, granulations, &c. There is also no doubt that although coition may sometimes be practised at the menstrual period with impunity, such imprudence has often caused congestions, more or less serious inflammations and, what

is much more dangerous, sudden suppression of the sanguineous discharge with internal hæmorrhage of a formidable nature, such as retro-uterine or peri-uterine hematocele.

Generally, however, sexual intercourse acts less frequently in producing than in perpetuating uterine disease. In special circumstances a diathesis may become localised in the uterus from the first sexual excitement. As a rule, however, it is not during the first years of marriage that the greatest number of uterine diseases are developed, but only after disorders of menstruation, pregnancy, abortion and labour. In such cases coitus is neither the original nor secondary cause of the disease; but it keeps it up, prolongs and aggravates it; I have occasion to observe this every day with regard to uterine congestion. It even causes relapses after a cure has been effected, therefore under certain circumstances we cannot be too particular in forbidding it.

Pregnancy and labour are beyond all doubt the most frequent causes of the development of uterine disease. They act in two ways: as predisposing causes by the important modifications imparted to the organic structure, and as exciting causes by the traumatism which they produce. Aran classes two-thirds of all utero-ovarian disease as the results of pregnancy, labour and abortion, one-fourth as occurring in women who have had children, and one-tenth only among virgins and nulliparæ. Pregnancy congests the uterus, imparting to it a violet hue; it increases the capacity of its vascular, and especially of its venous system. It hypertrophies its tissue; in short, it determines the increase, the fall and the renewal of its mucous membrane, so that when the organ is freed from the product of conception it is in the most favorable circumstances for becoming, or rather for remaining, diseased, for this state of hypertrophy, however shortly prolonged after the expulsion of the foetus, is a real disease. Labour acts as a real traumatism, owing to the mechanical lesions which it produces—the contusion and lacerations of the cervix, the bleeding wound resulting from the detachment of the placenta, the local and general reaction which follow, the uterine and peri-uterine inflammation which may be developed, the coincident traumatic fever with the suppuration and gangrene which are sometimes the results of this inflammation and which we may say are only developed in this single case of uterine disease. The results of labour have no less influence on the development of diseases of the womb. The least complicated morbid condition which may result is the persistence of uterine hypertrophy characteristic of pregnancy, owing to defective retrograde evolution of this viscus. It is difficult to determine the true causes of this defective involution, but it is probable that they do not differ from those which produce other diseases resulting from labour, such as rising too soon, physical fatigue, resuming marital intercourse prematurely, &c.

After abortion the uterus is even more disposed to become diseased than after delivery at the full period; not to acute inflammations, suppuration, gangrene, &c., but to congestion, engorgement and hypertrophy, especially to the hypertrophy referred to as due to defective involution. It seems that when the uterus has not passed through

the various phases of progressive evolution which ought to be completed between conception and parturition, the phenomena of natural involution is more difficult than after delivery at full term, and that it is more apt to be arrested. The elements of muscular tissue as well as those of the mucous membrane, when suddenly arrested half way when in full activity of development, have no tendency to pass through the modifications of atrophy, fatty degeneration and retrogression which characterise involution; in place of returning rapidly and completely to the normal dimensions of the unimpregnated uterus, they preserve the volume and structure appropriate to gestation, which predispose them to all kinds of morbid alterations.

If, then, pregnancy, labour and abortion have so much influence on the development of uterine diseases, what must the result be of cases of pregnancy rapidly succeeding one another, which leave the uterus no time to return to its normal condition and hinder the natural work of absorption of the gestative hypertrophy, and which, by keeping the organ in a state of congestion, expose it to the invasion of diatheses? And yet I must admit that I have known several women in whom the rapid succession of pregnancies (eight or ten in twelve or fifteen years) has not produced the development of any uterine disease, which is one of the most striking proofs of the large share which general affections have in the constitution of diseases of the generative system. In others I have observed a local fatigue produced by the persistence of the tumefaction of this organ, and general consumption due to the impoverishment of blood caused by this continual return of gestation. I have therefore concluded that the development of uterine disease in these women was due rather to the localisation of a diathesis than to the number of pregnancies, which seemed merely to have played the part of exciting cause.

The neglect of lactation is not without its influence in impeding the process of involution, and consequently in the development of uterine diseases. The considerable and continuous fluxion which lactation keeps up in the breasts probably diverts the fluxionary movements from the uterus, and therefore helps to dissipate congestion and engorgement. Lactation is also useful by preventing menstruation, with the fluxion and congestion accompanying it, from coming to add their influence to that of defective involution. It also prevents the premature return of pregnancy and therefore hinders the production of the morbid tendency just pointed out as the consequence of a rapid succession of pregnancies. Investigations made on this subject by Scanzoni show that out of 196 children born at full time of 54 women suffering from uterine affections only 57 had been suckled by their mothers, whilst Aran¹ tells us that out of 100 women affected with diseases of the womb 70 of them had never suckled.

Sterility may preserve women from many uterine diseases, but it does not guarantee them from others, especially from those which are dependent on the development and localisation of diathetic affections. Its influence is all the more liable to pass unobserved that when we

¹ Op. cit., p. 93.

encounter it accompanied with uterine disease it is not the sterility which has caused the disease, but the disease which has caused the sterility. With regard to this matter we cannot be too careful to trace the cause of uterine diseases to their first beginning and to the general and local conditions which may keep them up, for in removing them we may be able to cure the disease as well as the sterility. Sterility and celibacy can only be classed together with regard to absence of gestation. They differ entirely in other respects. In sterility the uterus has undergone the excitement of coitus, whilst the absence of this cause in celibacy seems to diminish the chances of the development of uterine diseases. Whether that be so or not, I will sum up my opinion on this point by saying that, with the exception of certain menstrual disturbances and the general disorders dependent on defective function, celibacy does not seem to me to predispose to diseases of the uterus; but it does not prevent them, I have seen old maiden ladies die of cancer of the womb. As for sterility, it has seemed to me oftener to be the effect than the cause of disease. In short, in considering the whole of the utero-ovarian system, we see that the diseases of one part of this system may become the causes of disease in the other part, sometimes predisposing, sometimes exciting causes. The community of functions involves a community of morbid susceptibilities. The same links often unite these various organs with regard to pathology as well as physiology. Numerous examples testify to the reciprocal action which diseases of the ovaries and Fallopian tubes exercise on the uterus, and *vice versa*. The covering of all these organs by the same serous membrane is an additional element in favour of this reciprocity of action. Inflammation is propagated by the peritoneum from the uterus to the Fallopian tube and to the ovary, more frequently still in the contrary direction. The adhesions, the membranous bands which form pathological connections between these different organs, are not without their influence; whether in imposing abnormal conditions in the performance of menstruation, or in favouring the escape of the ovum into the peritoneum in place of directing it into the Fallopian tube, they prepare the way for real morbid conditions.

We know very little with regard to the influence which diseases of the bladder and rectum have on the development of uterine diseases. It is the same respecting the influence exercised by diseases of the mammary glands. Our knowledge is still less advanced with regard to the possible influence suggested by Aran of diseases of the stomach and liver, heart and lungs, in the production of these morbid conditions.

As for the predisposing general causes, the circumstances which have more or less direct part in uterine pathogeny, are: age, temperament, constitution, and especially diathetic affections and confirmed diseases.

The age at which the greatest number of diseases of the womb has been observed is certainly that of sexual activity—the age when the generative functions are performed with most activity, when coitus is

most frequent, pregnancies most numerous. In 300 cases of metritis Nonat¹ observed 155 between twenty and thirty years. Aran,² in 100 cases of uterine diseases, had 62 in women between twenty-one and thirty years. That does not mean that uterine disease may not be developed at other ages from childhood to old age. It is, however, exceptional, and even the exception may be remarked by its preference for certain kinds of these diseases and for certain organs of the genital economy. Thus we often see vaginal leucorrhœa in children. I have seen a child before puberty who had the uterine cavity and the external half of the Fallopian tubes filled with a cheesy substance formed of condensed epithelial cells, showing the existence of serious disease. I have seen an ovarian cyst in a little girl of eleven who had never menstruated. Uterine cancer is not rare in the last period of the life of woman, at least after the menopause.

In short, every age has, so to say, its special predispositions. When we meet with disease of the womb in a child it affects the cervix, which at this age is much more developed than the body. After puberty and before coitus it is the body which is most frequently affected. After pregnancy both segments of the organ may be equally affected. Virginity does not exempt the young girl from uterine diseases. Bennet, Aran and others have made the same observation. They are liable specially to fluxion, congestion, leucorrhœa, uterine catarrh, and even to metritis, but less so than married women, especially women who have had children. The starting-point of these diseases is generally some disorder of menstruation, the predisposing cause being a catarrhal or rheumatic affection, or a scrofulous or herpetic diathesis. Diseases of the body, especially of its mucous membrane, uterine catarrh, and leucorrhœa, are more common than diseases of the cervix amongst virgins. Diseases of the cervix, especially ulcerations and granulations, although sometimes met with in young girls, are much more frequent in married women, and especially in multiparæ, in whom the cervix has been exposed to the contusions incidental to excessive intercourse, to the softening of pregnancy, and the lacerations of labour. After the menopause, uterine diseases, besides being rare, may exist for a long time without causing much pain or producing sympathetic disorders; in fact they may remain latent for an indefinite time.

We know nothing, at least nothing positive, as to the influence which mode of life, habit, residence in town or country, may exercise on the development of these affections. Whilst admitting that different modes of life exercise various kinds of influence, I cannot say that one leads more frequently to disease than another. Women of weak constitution and lymphatic temperament are certainly more exposed than others. They are especially exposed to the protraction of the disease owing to their defective reaction and to the predisposition which they have to general debility, and to cachexiæ which in them more than in other women are the rapid consequences of the impression produced by the morbid condition on the organism. Heredity may

¹ Op. cit., p. 59.

² Op. cit., p. 99.

have some influence, especially in such diseases as cancer. I have seen a few examples of this kind. I have also observed the same kind of granulations and leucorrhœa in mother and daughter. It must, however, be admitted that direct hereditary influence is not frequent, nor is it clearly proved to exist.

It is not so, however, with the various diatheses and all general affections, which undoubtedly play a considerable part in the existence of diseases of the womb. Some authors, such as Pidoux, whose ideas seem to have inspired Tillot's¹ thesis, exaggerate this influence by invariably attributing to diathetic affections the chief place in the etiology of uterine diseases. It is evident that the uterus, owing to its position, structure and functions, is not only exposed to the localisation of the various diatheses, but has of itself a tendency to originate chronic disease. We cannot, therefore, admit that in the majority of cases uterine lesions are only secondary symptoms occurring under the influence of a general state, nor that the lesion is in the uterus and the disease in the organism. The lesion is evidently the cause of all the sufferings of the women. Whether, led by experience, we admit the multiplicity and diversity of these lesions, or whether with Lisfranc we give the predominance to engorgement, or with Velpeau to deviations and granulations, with Dubois to catarrhal phlegmasia, or with Bennet to metritis, we cannot possibly allow that the serious change which this lesion produces in the vitality of the uterus is not the disease properly so called, and consequently the cause of all the symptoms, general and local; nor can we admit with Pidoux² that from a physiological point of view the uterus and its annexes are only the centre of the general changes which characterise women from the time of puberty, and not the cause of them.

Uterine lesions, whether acute or chronic, whether connected with a diathesis or not—whether they be functional, organic, or due to displacement—are really diseases characterised by their own symptoms requiring direct treatment. Whilst willing to admit that the diatheses have a considerable share in producing them—a much greater share than the local conditions just enumerated—I cannot agree with those who think their influence exclusive.

There is no chronic uterine disease that is entirely free from the influence of some diathesis. We cannot even make an absolute exception of deviations and displacements, as Bund pointed out in a paper read before the Academy of Medicine in 1849. Thus, supposing that fluxion, congestion, chronic inflammation, hypertrophy may exist independently of a diathetic affection, it is not the less certain that these morbid conditions are in some degree under its influence. As for engorgements, leucorrhœa, granulations, ulcers, cancers, &c., they are almost always dependent on a diathesis or a general condition not less real.

The knowledge of this diathesis, by enabling the physician to make

¹ *De la lésion et de la maladie dans les affections chroniques du système utérin.* Thèse de Paris, 32, 1860.

² *Lettre sur la fièvre puerpérale*, 1854.

a general diagnosis, often facilitates the local one. If we have previously discovered or if we recognise the actual existence of a marked diathetic condition, we may suspect it of being the cause of the evil. On the other hand we must beware of the tendency, which was too common with the ancients, of attributing the lesion to a constitutional taint of herpes, syphilis, scrofula or tubercle, and of committing Lisfranc's error of mistaking for tubercle some quite different cervical lesion.

Three orders of facts prove, in my opinion, that the diatheses have a more or less important share in the existence of uterine diseases, and that we ought to take them into account.

Firstly, the coexistence or simultaneous manifestations of these diathetic conditions in the uterus and in other organs. Thus, we not unfrequently see uterine leucorrhœa associated with vesical or intestinal catarrh, sometimes even with bronchial catarrh; eruptions or ulcerations on the cervix with herpes on the vulva, anus and other parts of the body, especially on the other natural orifices; a more or less painful but mobile congestion or engorgement of the uterus with rheumatism or erratic pains in the limbs, even visceral pains having previously manifested themselves in the same patient in other circumstances; an engorgement, granulations, ulcers on the cervix, with scrofulous symptoms, glandular swellings, ulcers, impetigo, &c., on other parts of the body. These coincidences are even more frequent in syphilis. They may also be seen in tuberculosis, cancer, &c. Secondly, the alternation between the manifestation and especially the exacerbation of the uterine disease and the localisation of a diathesis on another point. This phenomenon is observed especially in affections the seat of which is variable and mobile, like gout, rheumatism, catarrh and herpes. Just as in a man I have seen the darts of diathesis localised successively on the glans, urethra, prostate, bladder, ureter and kidney, so in a woman I have seen the vulva, vagina, cervix, uterus, Fallopian tube, or ovary attacked simultaneously, successively, or alternately, by the same disease. We know that several cases have been reported lately of ovaritis following on blennorrhagia, vaginitis or metritis, just as orchitis may follow urethral blennorrhagia in man. I have seen some remarkable cases of rheumatism associated with pain and swelling; of neuralgia depending probably on the same cause, and attacking alternately the uterus, ovary, or some other viscus, such as the bladder, the stomach, or the articulations, the nerves, fibrous tissue, aponeuroses, or lymphatic ganglia. Thirdly, the proof given by treatment, a sure test of the nature of disease. How many diseases there are, apparently simply inflammatory, which have been lessened by the application of leeches, rest, baths and all the other means of antiphlogistic treatment, but which have only been cured by mineral waters, hydropathy and specific treatment appropriate to the character of the evil!

The diatheses which have the greatest share in the etiology of chronic diseases of the uterus may be either hereditary or acquired. There is no utility in distinguishing them nor in separating them from

other general states of the organism which may have a similar influence on uterine diseases. We may, therefore, class in this category all spontaneous blood disorders, of which the most frequent type is chlorosis, which plays so important a part in female pathology. Chlorosis may exist already in a woman attacked with a uterine disease. It may even be the cause of this disease. When, however, the latter is developed the chlorosis generally becomes more marked. In some cases it is consecutive to the lesion which was primarily produced by a diathesis. Deglobulisation of the blood, whether it be anterior, concomitant or consecutive to the disease, whether it be cause, effect or simple coincidence, does not the less frequently accompany the majority of uterine diseases.¹

3. *The nature of uterine diseases.*—Most frequently the diatheses have not been the exciting cause of the disease; but after the malady is established they keep it up and really give it *its character*. The malady would not continue to exist without them; and it would be impossible to cure it without curing them, or at least without greatly modifying them.

After the diatheses an important part must be allowed in the production and chronicity—that is to say, in the *nature and character* of uterine diseases, to the vitality of the uterus, or rather to its mode of vitality, to the elementary physiological acts which are necessary to the accomplishment of its functions, to the facility with which it undergoes great changes and remarkable alterations in its structure and in its tissues. Undoubtedly the majority of our organs have in the accomplishment of their functions a continuity of action which would seem to make them more liable even than the uterus to the development of chronic diseases. But they do not undergo such great changes as this viscus does in regard to the innervation, circulation and change of tissue of the organ. It is just because of the extent of the oscillations, the return of these periodical acts, the temporary and exceptional activity of nutrition, that the uterus is more liable to become diseased than any other organ.

Among the elementary physiological acts which are connected most frequently with the production and aggravation of uterine diseases, we must place in the first rank those which contribute to the accomplishment of menstruation, *i. e.* fluxion, congestion and the critical evacuation of blood. These acts occur in almost every uterine disease as cause or complication. The physician can rarely utilise them. He has to frustrate their influence, moderate their manifestation, combat their effects. These three acts, as we shall afterwards see, govern each other mutually: the energy of the fluxion increases the intensity of the congestion, and consequently the amount of the evacuation. When the balance between these three essential elements of the menstrual function is disturbed disease breaks out.

¹ We may include among blood disorders those produced by general miasmatic poisoning. Paulin Dupuy, *Essai clinique sur quelques troubles d'origine paludéenne dans les fonctions génitales de la femme*. Thèse de Montpellier, 1879.

Fluxion is not only a powerful cause in the production of uterine diseases, it not only prepares the way for congestion, determines hæmorrhage, favours fluxion, aids hypertrophy, keeps up engorgement, furnishes to inflammation its natural element, but it hinders treatment, prolongs the disease by the periodicity of its return, increases it often by its intensity, and, in short, plays the principal part in the relapses which too frequently follow on apparent cure. Aran tells us that *congestion* ought to be considered under two aspects in uterine pathology: sometimes it is connected with an actually existing disease of the uterine system, of which it is a complication, aggravating or precipitating its progress, retarding or hindering its cure; sometimes it exists alone; sometimes it facilitates the development of new affections. It constitutes, strictly speaking, an element in uterine disease, and becomes a source of therapeutical indications. The capital indication in fact itself includes two other indications:—1, to diminish the congestive condition at the menstrual period; 2, to subdue the congestive condition which persists after any period till the appearance of the next. The *sanguineous discharge* may be either defective or excessive. If excessive it constitutes a disease (menorrhagia); if defective it prevents the natural crisis from taking place, and leaves the uterus congested, as a result of which we may have all the ills which I have just pointed out in speaking of congestion.

The physiological acts which take place in the uterus at every menstrual period are produced with much greater intensity at every pregnancy. Only here the fluxion and congestion of the organ are continuous, with the exception of some augmentation at the periods corresponding to the menstrual epochs. The sanguineous discharge, hæmorrhage, depletion of the congested organ only occur after delivery. In fact, great changes are effected in the tissue of the womb, and are added as new causes of disease. I do not speak only of the changes of tissue which are produced by gestation, but also of those which are effected by the return of the organ to the state of vacuity. To the physiological hypertrophy of pregnancy succeeds the physiological atrophy of retrograde evolution. To this we must add the renovation of the mucous membrane, so characteristic of uterine life, that it is produced not only after gestation but sometimes after menstruation alone.

The structure of the uterus is in accordance with its special functions. Its tissue is characterised by the presence of fibro-plastic elements, hence its continual tendency to hypertrophy. This tissue is in constant process of organisation, becoming hypertrophied by pregnancy, atrophied after delivery, in order to bring the organ back to its normal dimensions; in place of the stability characteristic of the other tissues, it has a continual instability, an incessant tendency to increase and decrease. This tendency is indicated by the presence, especially in the mucous membrane, of the organising element (the fibro-plastic element), and is coincident with analogous physiological tendencies, the habit of fluxionary movement, alternating congestion and depletion, &c.

Now, *fluxionary, plastic and hypertrophic tendencies* characterise the majority of uterine *diseases* as they characterise the *functions* of the organ. Fluxion, plastic exuberance, hypertrophy, may be exhibited in all the elements at once or only in some of them; hence the frequency of engorgements, congestions, fluxes, tumours or homologous productions of all kinds. Localised on the mucous membrane, very limited in extent, spreading to the most superficial part of the papillæ of the dermis, to its vessels, and to the epidermis covering it, this hypertrophy gives birth to the granulations so frequently found in the cervix. This same hypertrophy, spreading to the healthy granulations of an ulcer, at the moment when the work of cicatrisation brings into play a more or less energetic increase of plastic action, produces granular fungosities more frequently there than anywhere else. When concentrated in the organs of secretion, it develops tumours, cysts, and follicular polypi. Localised on the tissue proper, on its elements generally, it gives rise to hypertrophy properly so called; this hypertrophy may extend to the whole uterus, or be limited to the body or to the neck, or even to one segment of the neck or body, to one of the walls of the latter, or to one of the lips of the former. When limited to certain elements it produces vascular tumours, fibromata, or polypi.

Hypertrophy, besides being more common in the uterus than in any other organ, has the tendency to spread exclusively to one or other of the tissues composing the womb, and to a limited region of that organ. In this way the uterus remains increased in size owing to defective involution after delivery; it continues to increase if deviated or flexed, and prolapsus is sufficient to double its volume. On the other hand, its mucous membrane in certain menstrual disorders undergoes an accidental hypertrophy and exfoliation, the cervix becomes the seat of general or polypoid excrescences, the follicles form glandular polypi or cysts, the tissue proper produces fibrous tumours, &c.

Thus, by its structure, by its functions and the elementary acts which preside over their performance, the uterus differs from all other organs, in being in constant process of organisation, always liable to change of volume and structure. *Instability is its special characteristic.* In its tissue the equilibrium established between the nutritive movements of composition and decomposition, assimilation and disassimilation is not stable as in the other tissues; it is an unstable or momentary equilibrium. At the first impulse, it is disturbed and falls to the one side or to the other. This tendency to adapt itself to the part which it has to play in menstruation, conception, pregnancy and delivery it retains in all circumstances which place it in somewhat analogous conditions. Whether its cavity be filled by mucus, blood, or other fluid, or by a solid body like a polypus; whether a tumour such as a fibroma is developed in the interstices of its tissue, or a foreign body, external or internal, is introduced within its orifices, fluxion is determined, the uterus becomes congested, hypertrophies and contracts in order to expel the tumour or foreign body, then returns to its normal condition, loses its hypertrophic elements,

repairs its mucous membrane ; in short, it passes from the state of vacuity to a condition similar to that of gestation, once more returning to that of vacuity.

These curious, we may say unique properties of the uterine tissue seem to me to place in our hands the key to a mass of physiological, pathological, therapeutical phenomena, which can be utilised for the knowledge and treatment of uterine diseases. These properties evidently play a great part in the production of the latter ; and it is also important to consider them again with regard to the form and course which they give to these diseases, and consequently the characteristic symptoms which they often communicate, such as hypertrophy, painful contractions, uterine colics, dilatation of the cervix, &c. &c.

4. *The knowledge of these properties (and especially the instability) of the uterine tissue is important in relation to the cure*, which they may either hinder or facilitate according to the manner in which they are utilised by the physician in his treatment of the disease. Hence the indication for action. Lornet induced hypertrophy as Simpson did by means of metallic stem pessaries ; sometimes he provoked dilatation of the cervix by the introduction of foreign bodies, which develop uterine contractions and so facilitate the expulsion of a polypus, the enucleation of a fibroid ; sometimes he compressed the introverted uterus by means of an air pessary, as Tyler Smith did, to provoke simultaneously a dilatation in the neck and a contraction in the body, both alike promoting reduction. Hence also the indication for action in the opposite direction, using means to overcome morbid hypertrophy, by placing the organ under the same conditions as when it spontaneously undergoes retrograde evolution after delivery. Hence the innocuity of intra-uterine cauterisation with the crayon when there is abundant leucorrhœa or considerable granular fungosities ; for the mucous membrane is not affected, or it is easily repaired at the points which may appear to have been too much acted on by the caustic. Hence the innocuity of the actual cautery applied to the cervix or to its tissue ; for its mucous membrane, even if severely affected, which is not often the case, has a manifest tendency towards regeneration. Hence also the resolution induced by these cauterisations in chronic congestion, engorgement and hypertrophy, by promoting absorption and by giving an impetus to nutrition in that direction.

I shall not dwell longer on the tendency to hypertrophy, the plastic exuberance, the faculty of regeneration, which characterise the uterus anatomically, physiologically and pathologically. I shall have occasion to recur to it throughout this work when speaking of membranous dysmenorrhœa, granulations, fungosities, vegetations, follicular hypertrophy, follicular tumours and polypi, uterine hæmorrhoidal tumours, partial hypertrophies of the mucous membrane, hypertrophies of the tissue of the body, and of the cervix, fibroma, subperitoneal fibroma, sarcomatous polypi, &c.

I must, however, remark that this tendency to vegetation is not limited to the uterine tissue. There is the same tendency in the Fal-

lopian tubes and in the ovaries, especially under a cystic form in harmony with their structure. The same tendency is to be found in the vagina and vulva, with regard to which I shall point out some facts not generally known, showing that the vagina shares the hypertrophic tendencies of the uterus. For the present I shall only remark that the hypertrophic tendency shown in the highest degree in the mucous membrane, and in the muscular tissue of the uterus and in ovarian cystic formations, may be propagated successively to all the other parts of the generative economy, or separately to the various tissues which enter into their composition, either by simple extension, by participation in a great increase of physiological activity, or by community of morbid influences.

I think I have given a sufficiently detailed description of the general and local circumstances presiding over the development of uterine diseases to characterise these diseases sufficiently from this point of view.

Several of the characteristics which remain to be described are simply deduced from these circumstances; for undoubtedly till we reach them we cannot penetrate to the true nature of the diseases in question.

5. *Uterine diseases invariably have a double morbid nature, general and local.* I cannot share the opinion of Aran,¹ who thinks that the differences between the various morbid states are gradually effaced, and that after a certain time, in place of the original disease, we have to contend with a number of local and general symptoms, requiring, according to circumstances, the most varied treatment. Uterine diseases always preserve their twofold character; as diseases of the womb, they often differ from all other organic disease; as diathetic diseases they have more or less in common with other general affections. They have also a double set of symptoms: local symptoms, dependent on the sensibility and vitality special to the uterus; and general symptoms, dependent on the diathetic affection or on the sympathetic reaction excited in the organism by the local lesion.

Uterine diseases may assume different forms according to the manner in which these symptoms present themselves. In this respect, groups of symptoms, whilst offering infinite varieties in the mode of association, nevertheless present themselves under two principal forms, which ought always to be present to the mind of the physician that he may be on his guard against errors of diagnosis: in one, local, in the other, general phenomena predominate.

The form most easily diagnosed is evidently that in which there is a *predominance of local symptoms*. These are symptoms always linked together in a somewhat similar way. First, hypogastric pains increased by exercise, fatigue, constipation and the approach of the menses, and localised often in the left iliac region. Lumbar, inguinal and femoral pain occur afterwards. Leucorrhœa and menstrual disorders sometimes appear very early, at the commencement of the disease with the hypogastric pains, or they may gradually follow these

¹ Op. cit., p. 169.

first local symptoms. It is evident that uterine disease arising in this way cannot fail to strike the patient and to be diagnosed by the physician, especially if these local symptoms become more and more marked, if the hypogastric pains assume the character of colics, if the persistence or exacerbation of pain in the left iliac region draw the attention to the appendages, and especially if vesical tenesmus and constipation are added to the uterine symptoms properly so called. Very often, however, uterine diseases, in place of betraying their presence in a way likely to attract attention, remain undiscovered for a longer or shorter time owing to the obscurity, or it may be the complete absence of all local symptoms. In such a case the cry of the suffering organ does not come from the uterus, but from the whole organism. It is the result of the influence invariably exercised by the womb on the whole economy and the sympathetic reaction stirred up by the apparently insignificant disorders of this organ. Every time that a change takes place in the womb, that its functions are modified by puberty, menstruation, conception, pregnancy, the menopause, or that its vitality is impaired or its structure affected by some malady, the harmony of the whole system is disturbed. More than any other organ it is liable to disease, and more than any other organ it reacts on the whole economy.

The second form, with *predominance of general symptoms* may be so marked as completely to efface all local phenomena. We can easily understand how the sole existence of general symptoms modifies the symptomatic expression of a local malady, deceiving the patient as to the seat of disease and leading the physician astray in his investigations unless he is on his guard. I have already said that these symptoms in order of frequency are : dyspepsia in every form and degree, with its inevitable result defective nutrition, emaciation, decline, deglobulisation of the blood, discoloration of the skin and mucous membrane, palpitations of the heart, feeling of suffocation, cough and nervous symptoms of various kinds. In most cases local symptoms are not entirely wanting, but they are insignificant and intermittent and tolerated by the patient from habit, or from energy of character, or her attention may not be attracted to them owing to their vague character. They must therefore be discovered by the physician. It is surprising what characteristic symptoms pass unnoticed by patients unless we are particular in our inquiries. This is the case with leucorrhœa; many women think it is almost a normal phenomenon, especially if they have been chlorotic in their youth and the white discharge has replaced the sanguineous one, or if the leucorrhœa precedes or follows the menstrual hæmorrhage and is not abundant. Now, it cannot be too distinctly stated that normally there is no white nor transparent discharge, and that when such exists, whatever may be the general or local cause, it ought necessarily to suggest the idea of a genital malady, and that functional disturbance of the digestive organs is not sufficient to cause it; in fact it is not the dyspepsia which produces the leucorrhœa, but the leucorrhœa which causes the dyspepsia. When the malady presents itself under this form, with predominance

of general symptoms, it rarely happens that certain characters of these very symptoms do not lead the physician into the right track ; such are the coexistence of nervous phenomena in the lower limbs, nervous cough, *facies uterina* and hysterical symptoms, especially a feeling of faintness felt by the patient when standing.

It is remarkable, as I have already said, that between these two forms there is another in which local and general symptoms are concealed by a *morbid increase of flesh*, which gives the patient a fictitious look of health, although there is very real and sometimes very acute general suffering and local pain. I have seen several cases of this kind where the commencement of the malady was mistaken for pregnancy.

6. *The complexity of symptoms more or less vague* seems to characterise certain morbid conditions of the womb. Uterine maladies differ in character not only by the predominance of general or local symptoms, but also by the presence or absence of a certain symptom characteristic of a certain morbid condition.

Sometimes the morbid state is easily determined ; it is accompanied by a certain acuteness ; its characters are well defined, its symptoms have one meaning. Sometimes after a certain period, the acute feature having entirely disappeared, the primitive form gives place to a congestive condition accompanied by several concomitant disturbances, each of which is insufficient to characterise a malady, but which taken together are serious enough, and yet there is no symptom predominant enough to indicate to the physician the dominating element of this morbid condition, the one with which treatment should commence. It is this condition to which Pidoux has given the name of *Dysmetria*. I know that these complex and half-effaced morbid conditions are not described in uterine pathology, but they exist in practice. In such cases we must attack the various elements of the disease successively, at the risk of being accused of merely treating symptoms ; we often end by simplifying the malady and discovering the true starting point of the chief troubles. I admit that complexity is not special to uterine diseases more than to those of other organs, but it must be taken into account in making the diagnosis. Amongst all these associated morbid elements we must distinguish those which, although blended in one disease in the same organ, yet merit the name of complex diseases, from others which, by remaining always distinct, even when they spread to portions of the same economy, ought to be designated under the name of complications.

7. *The complications of uterine diseases are variable.* They are not only the sympathetic phenomena and the general symptoms occasionally developed ; they consist also in the disorders of various organs making part of the uterine system and in the organic disorders of other systems.

The various *organs composing the uterine system* are seldom affected singly, or at least they do not remain long without being attacked by some malady which complicates the primitive one. When the ovaries are inflamed or transformed into cysts it is seldom that there is not

fluxion, congestion, engorgement of the uterus. When the uterus is diseased it is perhaps rarer still for the peritoneum, Fallopian tubes and ovaries not to be affected by the same disease, or at least by the inflammation or congestion accompanying it. Mayer, of Berlin, in a paper entitled '*Quelques mots sur la stérilité*,'¹ affirms that, out of 263 cases of women affected with sterility, and having some uterine ailment, 35 had fluxions or versions with the following complications: 13 had endometritis, 8 chronic ovaritis, 7 ovarian tumours, 4 hypertrophy of the uterus, 2 uterine polypi, 1 a fibroid tumour. Sometimes there are complications which aggravate the evil and increase the difficulties of the case.

Organs unconnected with the uterine system may also be more or less affected. Thus, in 100 uterine diseases, Aran² has counted the following as complications: 18 cases of inflammation of the appendages, 31 of catarrh, 25 of pulmonary phthisis, 9 of cardiac disease. I think, however, that these complications are not so frequent as these statistics (which probably are hospital statistics) would lead us to suppose. In short, complication like complexity is a certain fact in uterine diseases which must be taken into account. The various elements of this morbid association must be attacked simultaneously or successively. Sometimes the complication has not been discovered till the uterus improves. Then the disease of the ovary or peritoneum which had passed unnoticed is distinctly recognised in such a case. This disease claims our attention and supplies the major indications. Such surprises can only be avoided by the physician making a very careful and minute examination.

8. *Uterine diseases are essentially chronic.* The course which characterises the majority of uterine diseases can be easily deduced from the long details into which I entered when treating of their etiology. With the exception of traumatic and puerperal diseases there is perhaps no uterine malady that is not very slowly developed. A great number even of the diseases of the uterus and appendages which attack women after delivery would not make their appearance if the organ or organism were not predisposed. Therefore, even when we see diseases such as these accompanied by a group of acute symptoms, we may say that all uterine diseases are primarily chronic.

They owe this character of chronicity to the share which the diatheses have in their constitution and to the anatomical and physiological conditions of the uterus on which I have insisted so much. In some circumstances, however, acute symptoms occur at the commencement of a uterine disease, at other times later. But these acute symptoms are merely associated with the invasion of the malady or may be exacerbations of it. The disease continues to pursue a chronic course. Its chronicity is kept up by the majority of the causes which induce acute phenomena. The periodical recurrence of fluxion and congestion hinder cure and keep up the evil. If they exceed their

¹ *Virchow's Archiv*, Sept., 1856.

² *Op. cit.*, p. 155.

ordinary proportions or if they are accompanied by some unusual circumstance this is sufficient to revive inflammation or give to other morbid elements renewed nourishment which rekindles the acute symptoms. We may say that the periodical return of subacute symptoms is characteristic, as well as chronicity, of uterine diseases.

9. *The difficulty of cure is not less characteristic of these diseases.* Undoubtedly some are incurable. It is also certain that cure may easily be effected when the disease is simple and acute or at least recent; even then it necessitates a longer treatment than if situated elsewhere. Whilst, however, the majority of uterine diseases are curable, we must admit that they are less so than the majority of diseases of other organs. I have already said that spontaneous cures do not occur. I may add that under the influence of the most rational treatment a cure is only effected very slowly. What retards it is the slowness and chronicity of the disease, the part played by the diathesis, the recurrence of menstruation which keeps up the disease, the unfavorable oscillations which this periodical fluxion establishes between the curative and the morbid tendencies, and the fixed exacerbations and relapses due to menstruation or to other causes.

The menopause may lead to a return of health, but even this result unfortunately does not always happen. Fluxions, though irregular, are not less common when kept up by an old lesion, and as they are not always accompanied by evacuation, they have all the more tendency to keep up congestion during a certain time, that is till the patient has really entered on old age.

Therefore, even when under the influence of an appropriate treatment the malady has begun to yield, amelioration often remains stationary, and much perseverance and energy are required before the end is reached. A cure cannot be said to have been effected unless it has stood the test of time and the recurrence of several menstrual periods. Subjective symptoms, such as lumbar pain and disorders of innervation, may persist for a long time even after the disappearance of objective symptoms. Treatment must be directed against them uninterruptedly, for they too may cause relapses owing to the debilitated state in which they keep the organism.

Let me add that it is necessary to be on one's guard against the appearance of cure of uterine diseases, in the course of which another malady occurs. When an acute disease is developed concurrently with the malady of the womb, the uterine symptoms disappear in some measure in virtue of the law, *duobus laboribus simul obortis non in eodem loco, vehementior obscurat alterum*; but they return after the cure of the acute disease which had temporarily suspended them. Where a chronic disease occurs the two maladies exist and progress simultaneously, for the uterine disease has weakened the constitution, and this impoverishment only gives a greater hold to the other morbid act. Only a sort of equilibrium is established, in virtue of which sometimes the one sometimes the other has the advantage; in such cases, if the pathological condition endanger life, we must respect the uterine symptoms for fear that an exacerbation of this morbid condi-

tion should hasten a fatal termination. All practitioners agree as to the necessity of expectant treatment in such cases.

Two other reasons contribute towards diminishing the chances of cure in the case of uterine diseases which present a marked characteristic of chronicity; the first is that patients have become so habituated to their sufferings, and have learned to tolerate them so well, that they are unwilling to submit to the exigencies of a treatment the strict observance of which is often the only guarantee of success; for example, in certain diseases it is difficult to prevent marital intercourse, in others to prevent the fatigue entailed by social life. The second is the defective nature of the diagnosis and treatment; the defective nature of the diagnosis arises from a want of necessary precision, from omitting something in an examination, from failing to interpret correctly the symptoms observed, or from the difficulty in unravelling the various phenomena in complex cases; defective treatment is the result of a defective diagnosis, of the irregularity with which patients carry out their treatment, and in some cases, *e.g.* deviations, it is the result of the insufficiency of our therapeutical means.

If we consider the various circumstances I have just enumerated we can easily understand how little chance there is of spontaneous cure in uterine diseases, and how necessary is an intelligent medical interference, which must be both active and persevering if a cure is to be effected.

10. Before finishing this summary description of uterine diseases, I must refer to *their diversity*, and point out that mode of classification which seems to present them in the most natural order.

After all that I have said hitherto with regard to the crude systematisations that have been made in uterine pathology, and as to reducing all morbid conditions of the womb to one disease, the reader must have seen that I have throughout this work tried to give proofs of the existence of *many* morbid conditions differing as to cause, nature, seat, symptoms, indications and treatment. I admit that the difference is not always well marked, that the same causes sometimes produce different effects, that these morbid conditions are associated in place of being isolated and distinct; that, however, does not prevent the existence of a natural diversity. *The recognition of this diversity is the best basis of diagnosis and therapeutic indications.*

Only we must remember the meaning of the words *uterine disease*, and the limits which exist between health and disease in the generative organs.

Is every abnormal phenomenon, every material change a disease? Is there any essential and primary affection connecting these lesions?¹ Every abnormal phenomenon, every material disorder not involving disturbance of the uterine or other functions is an exceptional fact, but does not deserve the name of disease. If the uterine functions are disturbed, however, and if this disorder leads to others, there is disease. As to the diversity of uterine diseases, here as elsewhere we must apply

¹ Bondet, *Recherches sur la nature et les causes des affections utérines*. Thèses de Paris, 1857.

the natural method in order to distinguish the various morbid conditions which have a common seat. Now, it is evident that there are physiological disorders of the uterus which may react on the whole organism; and that there are affections of the whole economy which may be localised in the uterus. There are changes of organic tissue; there are displacements or changes with regard to the relationship of this and neighbouring organs. Lastly, there are diseases depending on one or other, or on both.

The nature of diseases ought to form the basis of the principal divisions. The variety of form and seat, the diversity of the parts or elements of the organ affected by the disorder, is the basis of the secondary divisions. Now in placing ourselves at this double point of view, we at once recognise the existence of uterine diseases that are fundamentally different. Sometimes they are functional disorders, menstrual troubles more or less serious, derangements in the expression and sequence of the physiological phenomena characterising the vitality and destination of the organ. Sometimes they are simply displacements, changes of position or direction, resulting from an alteration in the statical conditions of the organ, and causing a simple modification in its topographical anatomy and in its relations to the neighbouring organs. At other times the alterations are not limited to simple anatomical or physiological disorders; they affect the organ in its vitality, in its nutrition, often even in its structure and in the component elements of its tissue. Sometimes the development of a modification of local vitality or the localisation in the uterus of a general affection communicate to its functions a characteristic disturbance or determine in the organ the manifestation of very characteristic pathological acts, and finally the realisation of a fixed morbid condition. Sometimes a real diathesis invades the organ at once, or profits by a simple pathological act to fix itself there, communicating to the morbid condition the anatomical and pathological characters which distinguish it, and lead to its recognition on any other organ. Lastly, persistent alterations of tissue or the formation of new tissue, whether homeomorphous or heteromorphous, produce in the organ functional disturbances and often pathological processes, constituting the chief phenomenal expression of the disease.

It is plain, therefore, that uterine diseases can be distinguished by the same terms that are used in general and special pathology, viz. as *anatomical lesions, vital affections, organic disorders*.

11. *The diversity, however, is accompanied by complexity*, through the association of diseases. Regarded from the same point of view, uterine maladies will be seen to preserve their simplicity less than those of any other organ. Besides the characteristic complexity, we may remark the tendency in these diseases to be linked to each other; so that after a certain time it is more or less difficult to discover which is the original malady, and to determine whether the principal indication for treatment lies in the primary or in the subsequent lesions. Sometimes in fact displacements cause menstrual disorders and pathological effects, more or less complex; sometimes menstrual disorders (conges-

tion and increased weight of the organ) produce displacements. At other times diathetic disorders, organic lesions, neoplastic tumours determine functional disturbance. On the other hand, functional disturbance after a certain time is followed by diathetic disorders and the development of tumours. Displacements tend to produce simple pathological processes, as well as the manifestation of the most complex morbid conditions and the development of organic lesions. The worst is, that when these diseases are associated it is difficult to determine which of them causes the most serious symptoms, and, therefore, which ought to be first attacked. For example, it is not often that simple deviations cause real pain, but it frequently happens that they are accompanied by metritis, pelvic peritonitis, &c., and that consequently they occasion serious accidents.

We must always try to discover the link which connects pathological processes, and to determine which of the morbid acts takes precedence of the others at a given moment.

12. In order to *classify the various diseases according to their natural order of succession*, we must try to put those foremost which occur most frequently alone, and which are seen more frequently and uncomplicated for a longer time than others, passing afterwards to those which are composite and to those whose composition becomes more and more complex, and at last reaching the most composite of all, in each of which we may say that the whole of uterine pathology may be concentrated.

I. Classified according to this principle, *functional disturbances* take the first rank, *i.e.* diseases in which functional disturbances play the chief part and form the principal element of indication. Whether idiopathic or symptomatic, menstrual disorders are real diseases, for they seriously disturb the health. Menstruation may be considered as a delivery in miniature. Now menstruation and delivery are two functions unlike any others; in fact they resemble pathological rather than physiological acts: hence their tendency to produce disease. All functional disturbances are connected with menstruation. The catamenia may be defective, excessive or abnormal, giving rise to *amenorrhea*, including retention and deviation of the menses; *dysmenorrhea*, including uterine neuralgia; and lastly, *menorrhagia* and *metrorrhagia*, in which the sanguineous discharge is not only a critical evacuation but a real hæmorrhage (internal hæmorrhage is described with pelvic tumours). Not only are disorders of menstruation the most frequent diseases, but they so often complicate uterine maladies and have so large a share in their chronicity or in their exacerbations, that we must always take them into account and discover when they are the cause of these diseases, that we may obtain the clue to an important part of general treatment. For these reasons we ought to commence uterine pathology with the diagnosis and treatment of the disorders of menstruation.

II. Next to functional disorders, I have placed *changes of position*, the chief characteristic of which is an alteration in the situation, direction and form of the uterus. I know that these morbid con-

ditions are seldom as simple as has been supposed, their principal symptoms being as often dependent on their complications as on themselves; sometimes they may be the result of preceding morbid conditions, such as congestion, engorgement, and hypertrophy; whilst in their turn they may produce leucorrhœa, granulations, ulcers. But whatever may be the accompanying complications, whatever may be the displacement, there are cases in which a change in the conditions of the equilibrium of the uterus plays the principal part and may be disengaged from all concomitant phenomena. These changes are of four kinds: 1. *Displacements*, including elevation, descent, and hernia; 2. *Deviations*, designated under the names of inclinations, or versions; 3. *Flexions*, or changes in the relative position of the two portions of the uterus; 4. Lastly, *Inversions*, or changes in the relative position of the external and internal surfaces of the organ.

III. In proceeding from the simple to the composite, we encounter in the third place *morbid states without neoplasm*. I give this name to affections generated by a simple morbid act, local or general, diathetic or not diathetic, but neither accompanied by persistent changes of tissue nor by the formation of new elements. These maladies are often designated by the name of vital affections. The first of all these morbid conditions, those which help to produce or complicate the others, are, in the order of their production: *fluxion*, characterised by a temporary movement more or less vigorous, single or repeated; *congestion*, characterised by the persistence of local hyperæmia; *engorgement*, resulting from the repetition or persistence of the preceding states and from effusion of the serous elements of the blood into the affected tissues. Then follows *inflammation*, which borrows its principal elements from the preceding morbid conditions, and is characterised by its tendency to suppuration or hyperplasia, and which occupies a large share in the pathology of the uterus as of that of all other organs. I have classed with inflammation of the uterus that of its appendages, the surrounding peritoneum and cellular tissue; *i.e.* the morbid states known under the names of metritis, endometritis, parametritis, and perimetritis. I have not even separated ovaritis, inflammation of the Fallopian tubes and peri-uterine inflammation from metritis, because these morbid conditions are often associated and influence each other mutually; because when the one exists the development of the other is to be feared; and lastly, because they occasion the same indications and necessitate almost the same treatment. The morbid conditions which follow, whilst often connected with inflammation as cause, effect, or complication, are generally dependent on a diathesis. They are: *leucorrhœa*, *hypertrophy*, *granulations*, and *fungous growths*, *ulceration* and *ulcers*. The importance of hypertrophy, though for long misunderstood can hardly be overestimated.

IV. In the fourth rank I have placed *organic alterations*, *i.e.* the morbid conditions characterised by a persistent alteration of tissue and differing from each other according as they are produced without the formation of new elements, or with development of anatomical ele-

ments having no analogy with the special elements of the uterine tissue. The first, corresponding to homomorphous productions, include *fibromata*, interstitial fibrous bodies or sub-peritoneal tumours, whether pediculated or not, and *polypi*, mucous or epithelial, follicular, fibrous or vascular; with which, as far as diagnosis and treatment are concerned, *moles* are naturally connected. The second, corresponding to heteromorphous productions, are tubercle and cancer with all their varieties of form and of locality?

V. Lastly, I have arranged in a fifth category the *organic alterations of the appendages* and the abdominal or pelvic tumours resulting from their formation. This category, from which ovaritis and perimetritis have previously been separated, includes only two important morbid conditions: 1. Peri-uterine *hematocoele*, which is as much connected with diseases of the appendages as with peri-uterine maladies, since it derives its origin so frequently from hæmorrhages of the ovary and Fallopian tubes. 2. *Ovarian tumours*, among which *multilocular cysts* take the first place from their importance and the recent progress made in their treatment, and *tumours of the Fallopian tubes*, connected as they are with the interesting history of the migration of the ovum and of extra-uterine pregnancy. *Sterility*, its diagnosis and treatment, form the natural termination to this last chapter and to the knowledge of all the diseases previously studied.

I have thought it useless to reproduce the statistics of uterine diseases given by some gynecologists; for they do not even give an approximate idea of the relative frequency of these various diseases. If it is a question of hospital practice, either a special class of cases is seen, *e. g.* venereal affections, or only the most serious cases or cases requiring operation: for, as a rule, patients will not go to an hospital while they can move about. Hospital practice, however, never can be a fair sample of the innumerable variety of uterine diseases to be found in any country. A general practitioner having the entire practice of a district in his hands would perhaps be able to furnish more correct statistics. But probably even he would only see the most serious cases; the majority of the less serious would forego treatment under such circumstances, while others would address themselves to specialists in a neighbouring town. It is almost impossible for any statistics of private practice to give even an approximate idea of the relative frequency of different uterine diseases. This difficulty is quite independent of the diseases themselves; as for myself, I could not give such statistics. Formerly I had a great many cases of metritis, leucorrhœa, polypi, &c.; now I hardly have one, the reason being that women affected with these diseases are more or less successfully treated by young practitioners. Now, on the contrary, I have great numbers of incurable diseases, cancers, enormous fibromata, and ovarian cysts; patients coming to me from great distances because the treatment of other doctors has been unsuccessful. Such cases not only occupy much more space in my statistics than they formerly did, but much more than they ought to do from their relative frequency. It is the same with several other diseases, fortunately not incurable like those

just named, but more difficult to cure than a number of others, such as flexions, perimetritis, peri-uterine adenitis, phlegmons of the broad ligament, hematoceles, &c., as well as others such as mechanical dysmenorrhœa and the various diseases which result in sterility. These cases, which were almost entirely absent from my first statistics, occupy an important place in my later ones, since my successful treatment of a large number of cases became known to the public, and has been a fact recognised by the profession.

PART II

UTERINE DISEASES IN DETAIL

CHAPTER I

FUNCTIONAL DISORDERS.—MENSTRUATION—AMENORRHŒA—RETENTION OF THE MENSES—DEVIATION OF THE MENSES AND SUPPLEMENTARY MENSTRUATION—DYSMENORRHŒA—UTERINE NEURALGIA—UTERINE HEMORRHAGE.

STRICTLY speaking, there is only one function with the disorders of which we are concerned, viz. menstruation; and this function can only be deranged in three ways: it may be defective, excessive, or disordered.

Menstruation is a flow of blood from the uterine cavity, occurring in an intermittent manner, generally at regular intervals, except during pregnancy and lactation, from the age of puberty, *i.e.* from 12 to 15, to that of the climacteric from 45 to 50. Its regular recurrence shows an aptitude for reproduction besides indicating the most favorable periods for conception.

The mean duration of the intercalary or intermenstrual period being about a month, these hæmorrhages have been designated the monthly periods or menses, or the catamenia; their regular recurrence at fixed times has led to the term monthly periods; the dominant fact of the discharge to that of the catamenia; and the idea of the evacuation being favorable to the general health to that of *purgatio menstrua*.

Menstruation is the function. The words monthly period, menses, catamenia, &c., designate the external phenomenon which characterises it.

Disorders of menstruation

Menstruation deserves the attention of the physician as a means towards the interpretation of uterine diseases; it is a term of comparison. If menstruation has rightly been called a pregnancy in miniature, we may say that it offers an epitome of several uterine diseases taken as a whole or in some of their elements. Menstruation also deserves attention because it may become a cause of diseases of the womb; it has a considerable share in uterine etiology as well as in uterine pathology; for, although itself a physiological act, it places the organ which is the seat of it in conditions different from the equilibrium which is one of the characteristics of health in all the other organs. Menstruation ought also to excite our interest because, by

its disorders, it always discloses the existence of a uterine disease. Often we have no other means of arriving at a diagnosis. In women suffering from uterine disease, the menses either produce pain, cause its reappearance, or increase it; they last a longer or shorter time than in the normal condition, and often are so irregular that patients cannot fix the time of their recurrence. Menstruation is also worthy of our serious consideration on account of the aggravation of the local condition which it does not fail to produce in uterine diseases, as well as of the interruptions to treatment which it necessitates. Lastly, menstruation itself may be disordered; in its evolution and recurrence it is subject to more or less serious derangements which constitute those uterine diseases which will first occupy our attention.

In order correctly to appreciate the disorders of menstruation we must follow this function throughout its whole course from beginning to end. It may fail in establishing itself, or great difficulties may present themselves in its establishment, or it may disappear for some time. When established and regulated, circumstances may occur to suspend its course, or if it continue to recur regularly, it may be accompanied by more or less serious accidents at every period. The menstrual discharge may also be deranged with regard to the quantity and quality of the fluid excreted.¹ The ordinary division of the disorders of menstruation which, as I have said, may be excessive, defective or deviated, is very practical. The catamenia may not appear at the period of life when we naturally expect them, or they may be suppressed after a variable time; or the discharge may take place with difficulty; or it may be excessive in quantity, or it may recur too frequently. Hence three great classes of menstrual disorders, responding to which are often three kinds of capital indications.

1. *Amenorrhœa* including: *retained menstruation* and *deviated menstruation*.

2. *Dysmenorrhœa*, to which we may add *membranous dysmenorrhœa* and *uterine neuralgia*.

3. *Uterine hæmorrhages*, including *menorrhagia* and *metrorrhagia*.

These menstrual disorders are sometimes symptomatic, sometimes idiopathic. It is of great importance to distinguish the one class from the other, and this is what I shall endeavour to do in the description I am about to give of them.

It is easy to prove that the disorders of menstruation, considered as a whole, are of great practical importance. West² rightly remarks that the changes of *puberty* in the girl, like those of dentition in the child, are not effected suddenly, but are prolonged over a period of some months, during which time diseases frequently occur.

The tables of mortality show that this period is more fatal to girls than the preceding one, if we compare the numbers of deaths in the two sexes. Quetelet and Smits³ have shown that, whilst in infancy

¹ *Menstruatio aboletur, imminuitur, intenditur, depravatur.* (Astruc.)

² *Diseases of Women*, 4th edition. London, 1879, p. 26.

³ *Sur la reproduction et la mortalité de l'homme.* Brussels, 1832.

mortality is equal in the two sexes or greater amongst boys, it is, on the contrary, greater amongst girls, in the proportion of 1·28 to 1 from the fourteenth to the eighteenth year, and that it descends in the four following years to 1·05 for girls against 1 for boys.

The anxiety of parents at the approach of this period is therefore natural. Moreover, it is not without reason that this anxiety increases in proportion to the *delay* experienced in the first appearance of the menses. Whitehead has proved that the danger of accidents is greater when the menses are delayed than when they are precocious, and the researches made by West confirm this opinion. The following interesting statistics are given us by Whitehead :¹

First Menstruation.	No. of Cases.	Unfavorable Cases.	Proportion.
From 10 to 14 years . . .	1141	224	19·63
„ 15 „ 16 „ . . .	1178	324	18·75
„ 17 „ 18 „ . . .	892	247	27·69
„ 19 and upwards . .	239	97	40·58
Total	3450	892	22·30

Whilst delay in the appearance of the catamenia seems to increase the chances of accidents which follow the establishment of this function, its *precocity* seems to indicate in the uterus an activity favorable to the development of certain diseases, particularly of organic diseases, or rather of cancer.² Kussmaul,³ having come across a case of cancer of the ovary in a child of two years with the development of a girl of twelve or fifteen, asked himself if there was any connection between precocious puberty and ovarian disease. After numerous researches he arrived at negative results for serous or dermoid cysts, but positive for sarcomatous or cancerous neoplasms. Out of six cases of this kind which he collected in three there was a history of precocious puberty. Elleaume⁴ made similar researches with regard to the influence of precocious menstruation on the development of uterine cancer, and found that out of twenty-eight cases of this disease menstruation had occurred in nineteen before the age of fourteen years.

AMENORRHŒA.

Amenorrhœa (absence of menstruation), if we consider the etymology of this word, includes the tardy appearance of the menses, their premature cessation, and amenorrhœa properly so called.⁵

¹ *Treatise on Abortion and Sterility*, p. 48. London, 1847.

² I have often noticed that women affected with organic lesions of the uterus and ovaries had menstruated prematurely and abundantly.

³ *Würzburger medicinische Zeitschrift*, t. iii, 1862; *Archives générales de médecine*, février, 1863, t. i, p. 224.

⁴ *L'Association médicale*, 15 février, 1863, p. 55.

⁵ According to Etzmüller (Castelli *Lexicon*), the disappearance of the menses

The delay in the appearance of the menses may depend merely on the defective establishment of this function. Sometimes ovulation takes place although there is no uterine hæmorrhage. At other times there is delay in the sexual development or a suspension of the reproductive functions, either spontaneous or occasional, by some malady. Lastly, there may be absence of the uterus or imperforation of this organ, causing retention of the menses; therefore I cannot too strongly advise the physician to assure himself of the normal conformation of the genital organs, in certain critical circumstances in which a girl who has never menstruated may be placed; for instance, on the eve of marriage. I knew a young woman in this position: the family physician was consulted, and in place of dissuading the parents from marriage he was imprudent enough to advise it, under the pretext that conjugal relationship would not fail to provoke the catamenial flow. Unfortunately, I discovered some years later complete absence of the body of the uterus, so that I could give no hope of children to the unfortunate parents who consulted me. I found, however, that the ovaries were present in this young woman; so, too, were the menstrual molimen and sexual desire. I have had occasion to see other cases of the same kind.¹

The premature cessation of menstruation may also coincide with the cessation of ovulation or, which is rarer, may precede it. It seldom occurs without some exciting cause, either general or local. When genuine, it is neither accompanied by disorders nor by congestive phenomena in the utero-ovarian economy.

Amenorrhœa, strictly speaking, is the absence of menstruation after one or more monthly periods. Whether it disappear after some time under the influence of the efforts of nature or of an appropriate treatment, or whether it persist to an age when it becomes definitive, being transformed into the menopause, it may constitute an anomaly rather than a morbid condition. Amenorrhœa is normal during pregnancy and lactation. In every other condition it is either an accidental abnormal condition, or the symptom of a morbid condition, or a real disease.

Diagnosis.—*Symptomatic amenorrhœa* depends on various pathological conditions of the uterus or of the body generally. As regards the uterus, these are: malformation, either congenital, such as I have described, or acquired, as I shall have occasion to refer to in speaking of retention of the menses; inflammation, acute or chronic, but especially acute inflammation of the uterus or of its appendages; rarely organic lesions of the womb; oftener those of the ovaries. If dependent on the general organism, the menses may be suppressed by acute diseases, although this seldom happens when they occur at the commencement of a disease; they are, however, almost always suppressed (*suppressio mensium*) should be distinguished from their delayed appearance (*emansio mensium*).

¹ Courty, *Demande en nullité de mariage fondée sur le défaut de caractères sexuels féminins; consultation médico-légale et considérants du jugement. Montpellier médical*, t. xxviii, p. 473. Montpellier, 1872. *Annales de Gynécologie*, t. ii, pp. 325, 410. Paris, 1874.

towards the decline of the disease or during convalescence.¹ In chronic diseases the menses diminish, become irregular, and finally are suppressed, as the weakness increases and hectic fever makes its appearance and the prognosis becomes more grave; it is what happens every day in tuberculous and cancerous affections, in organic diseases of the heart and in Bright's disease, in cirrhosis of the liver when dropsy commences, in some nervous affections, in anæmia, in chlorosis, in polyuria, diabetes and obstinate diarrhœa.² In symptomatic amenorrhœa the cause may disappear whilst the amenorrhœa persists.

Idiopathic amenorrhœa is that in which more or less prolonged suspension and cessation of menstruation depend on a cause exerting a direct influence on this function.³ Any general disturbance may produce it by arresting the functions of the ovary or uterus, by preventing fluxion from taking place, by arresting congestion and hæmorrhage, by turning aside the synergetic movements which establish the *molimen* and cause the discharge of blood. It is probable that ovulation cannot continue to be effected unless uterine hæmorrhage is produced. The impression of cold in any form and on any part of the body—for instance, a cold sitz-bath or foot-bath, a change of linen, a fall or blow, the disturbance caused by a fit of indigestion, by blood-letting, an emetic, pain, or fright—are the most common causes of this derangement. Uterine torpor, congenital or acquired, and premature atrophy of the womb encourage this action. Anxiety, grief, change of habits and residence, as happens for instance with girls who are sent to school, a sedentary life like that in convents, and imprisonment following an active and free life, often produce a more or less serious and prolonged disturbance in menstruation. The facility with which this function is affected by slight causes is also common to most of the other acts of reproduction; the impressionability of the generative system seems to be greater than that of the other organic systems, so great that Raciborski has seen occasion to attribute amenorrhœa to the simple fear of pregnancy after illicit intercourse, or to the great desire of having children after prolonged sterility, and this he has designated amenorrhœa from *psychical causes*. Whether, however, the impression is produced on some part of the body (sudden chill, intestinal parasites) or on the brain (vivid moral impressions), it is by a kind of reflex action on the uterus that amenorrhœa is produced, which has led some writers to call it *sympathetic amenorrhœa*.

¹ Hérard, *De l'influence des maladies aiguës fébriles sur les règles*. Raciborski, *Traité de la menstruation*.

² Becquerel, *op. cit.*, t. ii, p. 406.

³ It is evident that either the ovary or uterus may be affected, hence the division of amenorrhœa, according to Raciborski, into *ovarian* or *radical* and *uterine*. The first may be organic or functional. Functional ovarian amenorrhœa, caused by a kind of torpor of the ovary, is true amenorrhœa; it may consist either in delays or in complete amenorrhœa. To be still more exact, we must distinguish, from this point of view, three kinds of amenorrhœa: 1, from absence of ovulation; 2, from absence of *uterine* congestion; 3, from absence of *sanguineous exhalation*.

Differential diagnosis.—It is important to distinguish idiopathic from symptomatic amenorrhœa, from retention of menses, and from the accidents of various kinds which may result therefrom.

Idiopathic amenorrhœa is sometimes well tolerated; but generally it produces more or less serious local or general phenomena. Sometimes the local symptoms predominate, especially those of congestion; fluxion is effected but has not its natural termination; absence of evacuation is not compensated by the natural reaction which tends to dissipate the fluxion after each period, and the congestion continues to increase, sometimes even rising to the degree of a permanent morbid condition. Sometimes fluxion does not take place, but this absence causes a disturbance in the general circulation and in all the other functions. General phenomena are manifested: in a few women it would seem that the habitual absence of sanguineous evacuation produces a plethora (resulting in congestions of the spleen, liver, lungs, or head, causing in the last case headache, drowsiness, congestive amaurosis,¹ &c.); in others on the contrary, and in the majority the blood becomes impoverished, innervation is disturbed, and symptoms of chloro-anæmia are developed. It is important to distinguish chlorosis produced by amenorrhœa from that of which, on the contrary, amenorrhœa is symptomatic.

Symptomatic amenorrhœa is always preceded by the disease of which it is only the symptom,² till such time as it can continue of itself, by virtue of the morbid habit which the repeated suspension of menstruation has impressed on the economy. Amenorrhœa symptomatic of defective development may have a number of features in common with idiopathic amenorrhœa causing them to be confounded together. Whether there is absence of the uterus or ovaries, or a rudimentary condition of these organs (*uterus fœtalis* or *infantis*) they have the common feature of amenorrhœa. When the ovaries are wanting there is only this one negative symptom. In the contrary case, we generally observe all the prodromata of menstruation, lumbar or hypogastric pain, a sense of pelvic fulness with pain radiating down the thighs. After lasting for some days this ceases, but is reproduced sooner or later the following month with a certain regularity. In other cases the disturbance is less marked: there is sometimes palpitation of the heart and violent headache necessitating bloodletting. Occasionally phenomena of hæmorrhagiparous congestion are developed on various parts of the body, which might lead us to think that the economy was in need of depletion, and tried to effect a vicarious evacuation. The duration of these troubles and hæmorrhagic *molimen* is very variable. Sometimes they last for a few years only, not unfrequently, however, they are prolonged for twenty. Then a

¹ Such is the case related by Samelsohn of complete amaurosis the result of a sudden suppression of the menses, which gradually disappeared when menstruation was again established seven weeks later (*Berlin. Klin. Wochenschr.*, 18 Jan., 1875).

² We must be on our guard against the tendency that women have of attributing all their diseases to amenorrhœa in place of regarding it as the effect of various pathological affections from which they may be suffering.

gradual amelioration takes place similar to what occurs after the menopause in women who have suffered from obstinate dysmenorrhœa.

Menstrual retention may be diagnosed by the hypogastric tumour of the uterus, distended by the accumulation of blood. The symptoms experienced by patients are generally in proportion to the quantity of fluid. Not only are symptoms of molimen manifested every month, but there are signs of repletion of the genital organs often accompanied by fruitless expulsive efforts. These phenomena, differing as they do from those produced in the majority of cases of amenorrhœa, are attended by painful periodical exacerbations, an intolerable and almost continuous nervous erethism, and often still more serious symptoms. In short, before deciding that there is amenorrhœa, we must ascertain that the genital organs are in normal condition. This examination ought not to be neglected even in women who have had sexual intercourse or children, for the obstacle to the discharge of blood is often internal or may have been produced after labour. The examination should not be confined to the vulva and vagina, but should extend to the uterus and its appendages. Lastly, the possibility of pregnancy must not be lost sight of.

Treatment.—The indications may be various. In the first place amenorrhœa may be compatible with the free exercise of all the functions and with perfect health, in which case there is evidently no occasion for treatment. It is the same when it is irremediable and symptomatic of an incurable disease in an advanced stage.

Treatment ought to be confined to hygienic measures when the amenorrhœa is only a delay in the first appearance of menstruation, or the result of convalescence from acute disease rather than amenorrhœa strictly speaking, and should be directed exclusively to the affection which has suspended ovulation in cases of *symptomatic amenorrhœa*; consequently, we must treat nervous asthenia, hæmorrhages, impoverishment of blood, anæmia, chlorosis, or even plethora (when it seems to have a share in producing the disease), without directing our attention to the genital system, and only endeavour to excite the ovaries or uterus directly by more or less powerful stimulants after having cured the maladies of which the amenorrhœa is only a symptom.

In *idiopathic amenorrhœa* the indications vary according to whether the general or local condition predominates. Almost all cases may be included in one or other of these categories; the periodical fluxion may either continue to take place in the uterus, congesting the organ without terminating in a discharge of blood, cases of this category being characterised by the predominance of local symptoms; or the fluxion may not even take place, being directed instantaneously after suppression to another organ, or it may take this false direction at a later period, or not at all; cases of this category are characterised by the predominance of general phenomena. The one class or the other, according to the case, becomes the principal source of indication.

The local phenomena which predominate are chiefly congestive. When general symptoms predominate they are more varied. For the

habitual suppression of uterine fluxion and evacuation may either determine plethora or chloro-anæmia with their various aspects and numerous consequences, or fluxionary movements, so varied in their progress, tendency, aim and termination. Hence two kinds of indications, the one being dependent on the defective normal fluxion which has to be recalled, the other on the intensity and nature of the general disorders which have to be cured; the one class may predominate, or they may do so alternately at different periods of treatment in the same patient.

Indications furnished by local troubles or by phenomena of uterine congestion.—It is not enough to characterise the form of these phenomena; in order to treat them efficiently, we must also determine their essential cause or nature. It is important to be able to refer the local troubles to congestion; but this persistent congestion is only the form of the malady; the basis of the morbid state which keeps up this condition is a disorder affecting the vitality of the uterus. In tracing its origin to this source, we discover that the disorder may affect the vital functions of the organ, its sensibility, contractility, secreting power, &c., or the properties of its tissues, their permeability, elasticity, resistance, &c. It is not, however, always possible to push analysis so far as to determine with certainty which of the two is the source of indication. There may be primarily or secondarily a simultaneous appearance of these various disorders of vitality, which we regard as the essential cause of hindrance in the evolution of menstruation. We see infinite gradations of this in practice, but in this description we can only touch upon the principal varieties.

Congestion may be imperfect, or may not be sustained by a sufficient effort, not reaching the highest expression of the physiological act capable of determining evacuation. In this case we must strengthen the fluxion and regulate it, stimulating it by various applications which affect the vascular system of the uterus. Gentle purgatives, *e.g.* castor oil, or small doses of aloes, or laxative enemata containing manna, molasses, honey, or a mercurial decoction, or one of lettuce and white beetroot, to which may be added a few spoonfuls of oil, glycerine, or a little soap, produce an intestinal flux, which is favorable to the establishment of menstruation. On the other hand, mild attractives, such as dry cupping, sinapisms on the upper and inner parts of the thighs as well as on the hypogastrium, or a few leeches applied to the external surface of the labia, are excellent means of inducing an external discharge of the blood which congests the uterus.

Uterine congestion may be sufficient, the means of expulsion only being defective. Sometimes irritability of the organ is the principal obstacle. In order to calm this we must have recourse to emollients in various forms: general baths, sitz-baths, hot poultices on the abdomen, fumigations, enemata, &c. Sometimes the blood is retained by erethism or by spasm of the uterus. In this case preparations of aconite, henbane, belladonna, or poppy-heads may [produce the desired result; they may

be administered internally, or externally in the form of enemata, baths, fomentations, or embrocations. Sometimes inertia of the uterus or suspension of its muscular contractility, are essential conditions of the imperfection of the act. Emmenagogues are then the best uterine evacuants, especially ergot; electricity, and douches on the cervix may also be tried with the same object.

In a third class of cases congestion is more than sufficient, exceeding the limits of the physiological menstrual state, and by its excess hindering the natural discharge from taking place. The uterus is turgid, its volume greatly increased, its vessels are gorged, its fibres distended, its elasticity and contractility diminished. In this case the indication is to empty the vascular system, either by direct depletion or by revulsion, with the object of subduing the excessive fluxionary movement which is the primary cause of this congestive tumefaction. The best of all revulsives is bloodletting from the arm; it ought not to be copious, especially if it has to be repeated; not more than from three to six ounces of blood should be taken, unless the intensity of the congestion and the attendant symptoms require a more copious evacuation. This is sometimes followed by an immediate appearance of the menses; or it allows the other means used to produce their effect; or it may only produce an effect on the following periods, at each of which it ought to be repeated. We shall have occasion to see that the indication for bloodletting occurs in other circumstances, especially in the treatment of amenorrhœa symptomatic of uterine congestion, metritis, peri-uterine inflammations, &c.

Indications furnished by general troubles, i.e. by the absence of uterine fluxion and its reaction on the whole economy.—The aim of some is to attract or recall fluxion to the uterus, that of others to cure the general disorders or various affections the starting point of which was the absence or suppression of menstruation.

I. *To attract sanguineous fluxion to the uterus or recall it* when it has ceased, is an indication which we cannot always fulfil, nor ought we to try to do so in idiopathic amenorrhœa before having fulfilled the second of the two indications just mentioned. For the general disturbances imported by the amenorrhœa into the principal functions of women, especially when they have reached such a height as to have become themselves morbid affections, may ultimately have to be regarded as the essential cause of the suppression of menstruation. Idiopathic amenorrhœa touches so closely upon symptomatic amenorrhœa at this point, that the former may be transformed into the latter; so that after having been idiopathic and having produced diseases of the uterus or of the general economy, amenorrhœa may in its turn become symptomatic of these same diseases. Just as pain is the daughter as well as the mother of inflammation, amenorrhœa is mother and daughter successively of uterine congestion or metritis, of plethora, anæmia, chlorosis, &c. This mutual influence is exerted in various degrees, and the nature of its action in this intervention is as variable. But whatever its mode of action may have been, the amenorrhœa may, in its turn, become so dependent on certain morbid

conditions, that the primary, sometimes the only indication, is to treat these diseases, the cure of which will bring about at the same time, without the application of any direct means, the cure of the amenorrhœa. We must therefore take this subordination into account, and, in these complex cases, know how to fix upon the dominant indication, because it is the primary, sometimes the only indication to be fulfilled.

It would be impossible here to analyse all cases of this kind, or to determine when one of these indications should be fulfilled to the exclusion of the other, when one before, or after the other, or when the two simultaneously. Forced to separate what ought often to be united, and to describe in a certain order of succession what ought often to be practised in an inverse order, we must point out that in describing the treatment of idiopathic amenorrhœa, we have given not the first rank, but the first place to a description of the indications connected with defect of the uterine fluxion, and the second to a description of those connected with the concomitant general disorders.

To determine the appearance or return of the uterine fluxion is an indication that can be fulfilled by means analogous to those employed to attract fluxion to any part of the economy. It is manifestly easier to attract to the uterus and to establish in this organ a fluxionary movement which is natural to it, than to attract an artificial fluxionary movement to any other part of the body, the latter being essentially a morbid act, whilst the former is a physiological one. This fluxionary movement being intermittent and periodic, the means used to produce it ought to be in harmony with this characteristic, *e.g.* : when we have not succeeded in re-establishing menstruation during the first days which follow a sudden suppression of the period, we must limit our efforts to the treatment of the symptoms produced, and await the probable return of the following period to try new means.

All the functions of the uterus having a share in the maintenance of its physiological state will have an equal influence in the cure of amenorrhœa. Menstruation being composed of several successive acts, we shall certainly have more chance of restoring the first of these acts to its normal type if we try to restore the others consecutively, and to bring into play the faculties and properties of the organ by means of which they are carried out. For instance, evacuation and congestion will encourage the physiological return of fluxion. The realisation of the former processes will exercise a kind of attraction on the latter : whilst on the contrary the more the fluxion falls short of its final result, the less tendency it will have to be reproduced. These principles ought to guide the practitioner as to the nature of the means he should use, and the order in which he should employ them. Of all these means the most physiological is marriage ; we are therefore justified in advising it, when amenorrhœa does not seem to be dependent on any malformation or defective sexual development, nor to have determined the appearance of any serious disturbance in the uterine system or in the general condition of the patient. Before

giving such advice, however, we must ascertain that a uterus is present and that there is no obstacle to the discharge of the menses. If this is the case, or if amenorrhœa has occurred after repeated menstruation, we must resort to those general and local means which have a tendency to encourage uterine fluxion and hæmorrhage. All medicaments which attract the blood to the lower part of the body, to the pelvis, rectum and uterus are used to fulfil this indication in the treatment of amenorrhœa. Women themselves know the utility of foot-baths, sitz-baths, sinapisms, fumigations, leeching and purgatives in determining the appearance of the catamenia or recalling them when suppressed. They often employ them without consulting a physician in cases of sudden suppression of the menses under the influence of moral emotion, a chill, arrested perspiration, &c. Very hot sitz-baths repeated several times a day, especially when mustard is added (the effect of which is more durable than that of heat); fumigations taken by sitting on a high vessel at the bottom of which boiling water has been poured over a handful of aromatic herbs; vapour douches round the pelvis; prolonged tepid foot-baths with the addition of half a pound of mustard; sinapisms applied to the lower part of the body, especially to the inner side of the thighs and to the hypogastrium; dry cupping applied to the same parts; the application of leeches to the groins, anus, external surface of the labia or even to the cervix (care being taken in the latter case to apply not more than two on each side, and to repeat this application two or three days running); drastic purgatives, such as jalap, gamboge or aloes; enemata of aloes containing from ʒss to ʒiiss of aloes suspended in the yolk of an egg and ʒiij of water (Schönlein); sometimes cold douches to the pelvis and legs; such are the means usually employed. They often suffice when repeated for several months consecutively. When necessary a stimulus may be applied directly to the vagina and cervix by irritating vaginal injections. Ashwell advises 10 to 60 minims of liquid ammonia mixed with ʒiiss of milk repeated several times a day; beginning with ten drops and adding five every day till a slight leucorrhœa is produced.

There are various ways of encouraging *persistence of the congestion* which these fluxionary movements determine in the uterus; for instance by applying very hot emollient cataplasms for a long time to the abdomen, or by enveloping the pelvis and abdomen with hot flannels impregnated with aromatic vapours, and covered with oil-silk or gutta percha, so as to maintain a constant moist heat. For chlorotic patients Pajot recommends that the lower limbs should be bandaged, a powerful and rational means when blood-letting is contraindicated, and when the digestive organs do not tolerate medicines.

Other medicaments seem to possess the property not only of congesting but also of *evacuating the uterus* by causing contraction of its muscular wall. Their real or supposed action on the uterus has gained for them the name of emmenagogues. I do not refer to the tincture of iodine and some other medicines which have been tried and too highly vaunted by certain physicians; probably they answer

special indications and modify the general health rather than exercise any direct local action. But amongst emmenagogues proper if the action of ergot is incontestable, what are we to think of rue, savin, absinthe, saffron, &c., which enjoy a popular reputation? Ergot evidently causes uterine contractions and facilitates the menstrual discharge. It is generally associated with the others in various popular recipes of doubtful efficacy. The following pills combined with the other means just enumerated often prove useful:—*Rue*, *Savin*, *Ergot*. āā gr. $\frac{3}{4}$, *Aloes* gr. $\frac{1}{4}$ to gr. $\frac{3}{4}$.—Make one pill and take 3 pills the first day, 6 the second, 9 the third, three times a day. As a rule these pills should be preceded by foot-baths, sitz-baths and fumigations, and leeches should be applied to the labia the three days on which the pills are taken. These pills often cause colics and a little diarrhœa. Joret¹ and Marotte² give *apiol* (the active principle of *apium petroselinum*) for amenorrhœa and dysmenorrhœa in 4-grain doses twice a day at the time of the monthly period. Marotte says that this remedy is sometimes very efficacious, especially in cases of simple amenorrhœa, when apparently the only indication is to act on the uterine circulation, on its vaso-motor system, and so to induce an escape of blood from the vessels. It is the same in dysmenorrhœa not dependent on any mechanical obstacle or organic condition of the uterus. If amenorrhœa and dysmenorrhœa are partly dependent on a general local condition, *apiol* can only be of use when the complex condition has been brought back to that of simple amenorrhœa or dysmenorrhœa. The use of electricity is quite rational, and has given incontestable proofs of its efficacy. One of the poles should be applied to the loins, the other to the groins, hypogastrium, and perineum. The cervix may be seized with an excitor having two branches isolated, so as to protect the vagina, except at the extremities which embrace the cervix; or one of the poles may be applied to the cervix, the other to the hypogastrium; or one of the poles to the uterine cavity, the other to the cervix, hypogastrium, or rectum. It is easy to understand how this repeated excitation may stimulate the fluxionary movement and cause contraction of the uterus. The cold douche applied to the cervix has an analogous action, and may also be useful;³ metritis, however, is to be dreaded. Simpson used other very ingenious means, based on the knowledge of the physiological laws of the uterus, and producing the effect of exciting contractions in that organ. For simple dilatation of the os externum, as in the case of mechanical dysmenorrhœa, Simpson used stems, or rather pessaries (*See* Figs. 185 and 186), the stems of which varied in diameter, like the bougies with which the urethral canal is dilated. But besides these pessaries, the mechanical action of which, although limited to the orifices, causes uterine contractions by the contractile reaction of the body from titillation of the cervix, Simpson sometimes introduced into the uterus longer stem pessaries made of two metals,

¹ *Bulletin général de thérapeutique*, fév., 1860.

² *Id.*, octobre, 1863.

³ Panas. Thèse de Enguehard. Paris, 1868.

an instrument which we have already described as the galvanic stem pessary. At other times he applied what he called a dry cupping-glass (See Fig. 207) to the uterine cavity, *i. e.* a hollow sound pierced with holes at its terminal extremity, the other end being screwed on to a small aspirator. As a vacuum is made in the instrument, a kind of aspiration is effected on the mucous membrane of the uterus, which is thereby sucked against the minute apertures of the sound through which eventually the blood filters after repeated applications have been made several days consecutively, or at several monthly periods.

II.—*General disorders due to amenorrhœa* are very numerous and very varied. They may be ranged under two principal divisions, according as they depend on anæmia or plethora. There may be a *general plethora*, or too great a quantity of blood in proportion to the size of the vessels which contain it; the indication then is clear; we must empty the vascular system by repeated blood-letting, general and local, by purgatives, by regimen, by diminishing the quantity of food, by exercise, &c. The state of plethora may, so to speak, be localised on one point or one organ, which has become congested owing to the repeated fluxions of which it has been the seat since the commencement of the amenorrhœa. This congestion is permanent or temporary; it may be intermittent, recalling the menstrual periodicity, as I shall explain in speaking of deviated or supplementary menstruation. It may even extend to hæmorrhage. Hence different indications varying with the seat of congestion, its character, intensity, duration, its intermittence, its sequences, such as hæmorrhage, &c. If the head, chest, or other important organ is the seat of the evil, the latter must be treated with greater energy without reference to the uterine fluxion which can be recalled afterwards. In short, we must carefully watch the affected organ in the interval or in the absence of the menses, and try to destroy the morbid predisposition which makes it the *locus minoris resistentiæ* (E. Fritz). Usually, however, the general disorders of health assume an opposite character from that of plethora, that namely of *anæmia* or *chlorosis*. These two maladies are often confirmed and greatly increased by amenorrhœa. The nervous disorders which follow suspension of menstruation, even when they do not assume the character of true neurosis, greatly contribute, in concert with digestive troubles and dyspepsia, to derange nutrition, and consequently to throw patients into an anæmic condition or to develop a tendency to chlorosis. This disease is apt to produce derangements in the health very difficult to remedy. Lastly, under these combined influences we may see *diathetic affections* developed in patients having a predisposition to them, but in whom the outbreak is occasioned by the general debility of the constitution.

Such are the various sources of indications arising most frequently from general disorders of the health accompanying amenorrhœa. The indications are the same when these diseases have preceded and produced amenorrhœa in place of following it. In both cases we must first

of all direct our attention to the affection in question, and when it is cured the amenorrhœa will disappear spontaneously.

In addition to the means to be used in the treatment of a nervous condition, to those which are efficacious in cases of dyspepsia, and to the medicaments peculiarly suitable to the diathetic affection that may have been developed, we must employ tonics of all kinds.

Hygiene must be the basis of our treatment; a country life, exercise, gymnastics, hydropathy, warm clothing, nourishing and easily-digested food, tonics, and iron in one of the forms already indicated, will generally be successful. The use of natural effervescing and chalybeate waters, taken on the spot, and so involving change of scene and climate, is often of great service. The waters of Lamalou, Andabre, Sylvanès, Boulou, Vals, (Ardèche), Royat, Vichy, may be prescribed in such cases with great hope of success.

RETENTION OF THE MENSES.

This condition is characterised by the apparent absence of the catamenia, which, owing to some cause or other, are retained in the vagina or uterus. It is not, therefore, strictly speaking, a disease; at the same time it is so marked a symptom and connected so closely with certain anatomical lesions, that it is convenient to describe these various lesions under this common name. Amongst the maladies which may be the causes of this accident the most important are:

1. Congenital imperforation of the vulvo-uterine canal, including the non-separation of the external genital organs, imperforation of the hymen, absence or obliteration of the vagina, imperforation of the cervix.

2. The accidental obliteration of the uterus or vagina owing to cicatrix or to gangrene.

In neither of these two cases can the normal menstrual discharge take place by the efforts of nature. Excretion by abnormal paths (*e.g.* genito-rectal or tubo-vaginal) can only be effected with great danger.

Retention of the menses as a morbid condition, therefore, is limited to symptoms pathognomonic of atresia of the genital canals, *i.e.* to cases in which some obstacle, congenital or acquired, prevents the discharge of the catamenia. Characteristic troubles follow, and the indication evidently is to allow the escape of the fluid accumulated in the cavity above the obstacle.

Puech¹ has collected and scientifically explained all cases of this kind in a monograph printed in 1863, in the Transactions of the Academy of Science and Letters of Montpellier, from which I shall make numerous quotations.

The *atresia* (literally absence of orifice) or anatomical localisation of the obstacle varies in its seat and origin.

- I. With regard to the *seat of the atresia*, three kinds may be distinguished depending on whether it is in the vulva, vagina, or uterus.

¹ *De l'atrésie des voies génitales de la femme*, in-4°, p. 165. Paris, 1864.

1. *Vulval atresia*.—The labia majora as well as the minora may contract adhesions. These are almost always cicatricial; they never cause retention of the menses, but they may interfere with the expulsion of the urine or lead us to suspect the existence of stone, and they necessitate an operation, insignificant as a rule. With the exception of cicatricial adhesions they yield to simple traction. Imperforation of the hymen is the most common form of vulval atresia.¹ Puech has quoted 151 cases. Atresia of the hymen, which is most frequently congenital, may be complicated by an obstacle in the vagina, as Ruysch, Schultz, Walther and Burns have observed, or by an obstacle in the cervix, as seen by Butler and Picard.

2. *Vaginal atresia* may be congenital or acquired. Congenital vaginal atresia is said to be simple when the obstacle is limited to the vagina, complicated when it involves both vagina and cervix, complex when, the vagina being double, one of the canals is obstructed. The first kind is the most common. It may be subdivided according to the extent of the obstacle into three varieties. In the first are included membranous imperforations; in the second, cases in which the obstacle extends from 10 to 40 millimetres; whilst the third includes those exceeding the last limit. The second kind is distinguished from the preceding one by imperforation of the cervix; it presents two varieties, according as the two obstacles are or are not separated by a cavity. The third kind is characterised by duplicity of the vagina and imperforation of one of the canals. This kind, the rarest of all, has been observed by Leroy,² Décès³ and Rokitansky.⁴ Fifty-three cases are recorded of acquired vaginal atresia. They may be complicated by multiple adhesions or by a vesico-vaginal fistula, as seen by Meerck and Puech.

3. Although *uterine atresia* is rarest of all, fifty-four cases have been collected by Puech. It may be congenital or acquired. In the first case, there is imperforation of the cervix; in the second, obliteration. Imperforations are said to be simple when there is only one cervix; complex when, the uterus being double, one of the canals is occluded. There are on record thirty-four cases of the first kind and only two of the second. The seat of obliteration is generally the lower part of the cervix, and to this there is but one exception out of twenty-one cases, and that is recorded by Mattei, who observed obliteration of the os internum.

II. With regard to the *origin of atresia*, cases may be divided into *congenital* and *acquired*. Congenital atresia is an *imperforation*, acquired atresia an *obliteration*.

1. *Imperforation*, which occurs most frequently, is owing to arrested development. Taking the three zones (vulva, vagina, uterus) into

¹ We find a case of this kind in the *Ephémérides d'Allemagne*, Dec. 2, 3rd year, Obs. 151, quoted by Quesnay in his *Mémoire sur les vices des humeurs* (*Mémoires de l'Acad. roy. de Chirurgie*, t. i). See a case of atresia of the hymen, Fig. 97, p. 90.

² *Journal des connaissances médicales*, 1831.

³ *Bulletin de la Société anatomique*, 1854.

⁴ *Zeitschrift der Gesellschaft der Aerzte*, 1860.

which the genital economy may be divided with regard to development, we find the central zone the seat of the abnormality in 197 out of 230 cases; the central zone and the internal zone affected simultaneously in 7 cases; and in 31 the internal one alone affected. These malformations when cured are not inherited; at least we have no examples of this kind.

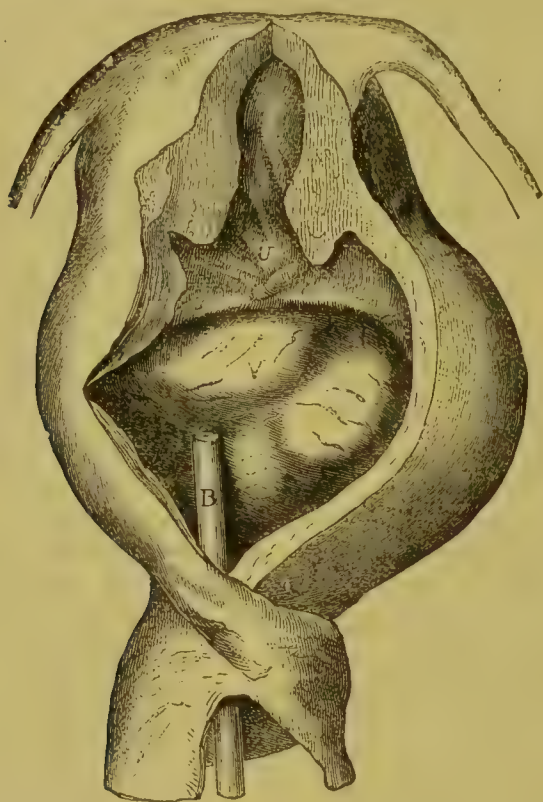


FIG. 211.—Congenital atresia of the vagina, from a preparation in St. George's Museum (from Barnes): *U*, dilated uterus; *V*, vagina dilated above the seat of imperforation, through which a sound (*B*) has been passed.

2. *Obliterations* are due to various causes, the most frequent being long and difficult labours, and especially laceration, suppuration, and gangrene; eleven cases are recorded of their occurrence in the cervix and thirty-eight in the vagina. Four times they occurred after the use of caustics, which in one case only had been resorted to for a criminal purpose, in the others they had been employed as therapeutic means. The cases recorded by Williams and Rigby, in which caustics had been used to cure cervical ulcers, ought to be a caution to surgeons. I myself have had to remedy 14 cases of constriction and 9 of complete obliteration either of the os internum or of the upper part of the vagina behind which the cervix was imprisoned, owing to the inopportune or exaggerated application of caustics to the upper part of the vagina or to the cervix. At other times this accident is caused by acute or chronic inflammation of the cervix or vagina; sometimes it is of spontaneous or unknown origin, sometimes it is

produced by excessive coitus, by irritating manipulations, by a tumour or flexion of the uterus. Syphilis, diphtheria, scarlatina, measles and smallpox are also occasional causes. Lastly, cholera (three cases) and typhoid fever (four cases), by producing mortification of the mucous membrane of the vagina or cervix, have brought about the same result. In short, the morbid adhesions which cause obliteration of the genital canals depend on the formation of cicatricial tissue which unites the two ulcerated surfaces. Happily for the patients these adhesions

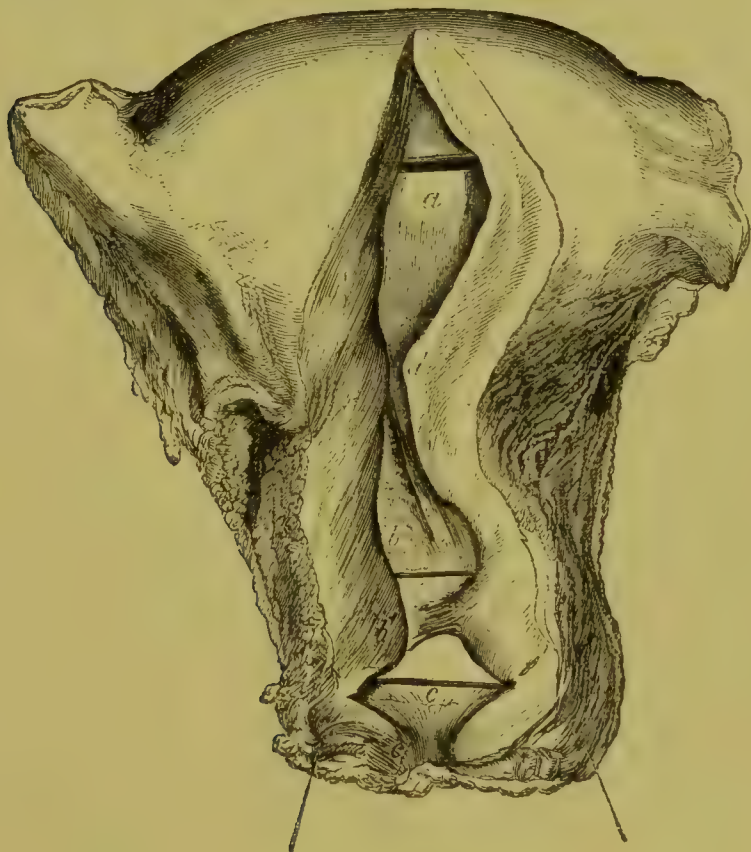


FIG. 212.—Acquired atresia (obliteration) of the cervix, from a preparation given by Barnes to the London Hospital. A woman of forty-three, married and sterile. Obliterating adhesions, caused by endometritis in a' and b' ; c , lower part of the cervix; b , middle part dilated; a , cavity of the body dilated as well as the Fallopian tubes.

produce contraction and mechanical dysmenorrhœa oftener than obliteration.

Diagnosis.—Atresia of the genital canals, whatever may be its seat (whether vulva, vagina or uterus), may be simple, complicated or complex.

The retention of the secretion, which is total and forms a unilocular or bilocular tumour in the two first cases, is only partial in the third, giving rise to the singular phenomenon of the free discharge of the menses, together with all the symptoms of mechanical dysmenorrhœa and of menstrual retention, including the tumour caused by the

retentum, with this difference, that in place of being median this tumour is lateral or unilateral.

Subjective signs.—The dominant symptom of atresia therefore is retention of the menses accompanied by phenomena of various kinds; some local, either uterine (including hæmorrhage) or in neighbouring organs; others general, symptomatic or sympathetic. In congenital atresia the commencement is often unnoticed; it is mistaken for difficulties attending the advent of menstruation, the symptoms subside in the interval of the fluxionary movements, and the uterus gradually distends. Acquired atresia, also, may be well tolerated at first; even from the beginning, however, the symptoms are more serious than in the former. In both cases they take the following course: at the time of the monthly periods the patients experience a sense of discomfort and weight in the pelvis. The back feels as if it were broken, and afterwards becomes the seat of pains which originate in the loins and extend to the hypogastrium and anus. These colics, after having lasted from three to six days, cease of themselves. At the next period the same phenomena take place; only they gradually increase in intensity, the renal or lumbar pains become more frequent and more acute, their morbid character increases, and sooner or later *expulsive pains* are developed similar to uterine contractions at labour. At the same time other hypogastric symptoms show themselves; *the formation of a tumour* of gradually increasing size, due to the dilatation of the uterine cavity from the accumulation of blood, is the inevitable consequence of retention of the menses and leads to various complications. These are generally in proportion to the quantity of fluid contained in the womb. If the uterine tumour presses on the sacro-lumbar nerves it causes a tingling and numbness in the legs. If it compresses the rectum it produces constipation or tenesmus; whilst if it pushes against the bladder it sets up not only vesical tenesmus and dysuria, but also retention or incontinence of urine.

For some months these are the only disturbances observed. The stomach and nervous system, however, are soon affected sympathetically. There is loss of appetite, nausea and even vomiting. The reaction on the nervous system is quite as serious, a state of erethism is produced by the intolerable pains which continue almost without intermission, as well as a feeling of suffocation and attacks of dyspnoea. Sometimes even delirium occurs, with more or less violent fits of convulsion; there is often loss of self control verging on insanity; a propensity to suicide may even manifest itself. The interval of relief between each monthly period gradually becomes shorter. The crises follow almost uninterruptedly, the general health suffers seriously, life being a long series of continued sufferings to the patient mingled with periodical exacerbations.

Objective signs.—The symptoms revealed by examination of the parts vary according to the seat and existence of the obstacle.

I. In imperforation of the hymen the touch and sight discover, at the entrance of the vulva, a tumour sometimes deep red sometimes violet, varying in size between a chestnut and a large apple. When

the hymen is very much distended the nymphæ may be effaced. This tumour, which is generally insensible, becomes distended and painful at the monthly period. Efforts of any kind, cough or pressure on the hypogastrium, by making it more prominent, allow fluctuation to be perceived. The conical form of the tumour, its projection between the labia, its spontaneous reduction, have led to its being mistaken for *prolapsus uteri*. Dubois de le Boë, Mauriceau, Amand, have related cases of this mistake. In other cases it has been said to resemble the bag of waters, and this singular error of diagnosis was once made.

II. In atresia of the vagina, when the imperforation is membranous, the results arrived at by touch are identical with those just enumerated. When the obstacle is more extensive rectal touch must also be employed. To measure the length of this obstacle the thumb is introduced into the lower part of the vagina till the occlusion is reached, whilst the index finger of the same hand is passed into the rectum till the lower border of the tumour is reached. The space between the finger and thumb gives an idea of the extent of the obstacle; if the thumb is not sufficient the index of the other hand is substituted for it, or a metallic sound: the results of this mode of exploration, though less exact, are valuable. Lastly, to estimate the thickness of the tissues separating the bladder from the rectum, a sound is introduced into the bladder, and is moved about whilst the index finger placed in the rectum follows its course; we can judge of the space which separates the sound from the finger, and consequently of the thickness of the tumour, by the facility and clearness with which the contact of the instrument is perceived. It is curious that, in some cases of obliteration of the vulva and vagina or of partial or total absence of the latter, communications have sometimes existed under the form of a fistula between the uterus and the rectum or the bladder or urethra, these canals serving for coitus to the extent of permitting conception to take place. Oldham, Routh,¹ Uterhart² and Spencer Wells³ have met with cases where the urethra, being either originally large or dilated by use, has served for coitus, and sometimes even for menstruation.

III. In atresia of the cervix, vaginal touch reveals the cervix shortened and deformed, projecting very slightly into the vagina and presenting no orifice whatever. The speculum confirms these data and allows the colour of the parts to be seen. The most significant characteristic, however, is that produced by distension of the uterus, by the tumour so formed, and its projection at the hypogastrium.

Hypogastric tumour.—The hypogastric tumour, more or less voluminous according to the frequency of menstruation and the quantity of blood exuded, is formed by the distended uterus. Bounded below by the obstacle, on each side by the bones of the pelvis, it can only be developed upwards. Consequently, although at first contained in the pelvis, it soon extends beyond it, and rising into the abdominal

¹ *Obstetrical Trans.* 1870.

² *Berlin. Klin. Wochenschrift*, 1869.

³ *Med. Times and Gazette*, 1870.

cavity increases in size till it reaches the dimensions of a pregnancy at full term, sometimes, though rarely, exceeding even that.¹ The tumour progresses by degrees, increasing and rising at the menstrual periods, diminishing and falling in the intervals, but each time remaining larger than it was before. Its form is generally globular, at other times it is ovoid and subdivided by strangulation, like a pilgrim's gourd, when the atresia, being at the base of the vagina, has successively determined distension of the vagina, cervix, and uterus, the situation of the sphincters of the vaginal orifice and isthmus being indicated by the resistance they offer to dilatation, preventing the

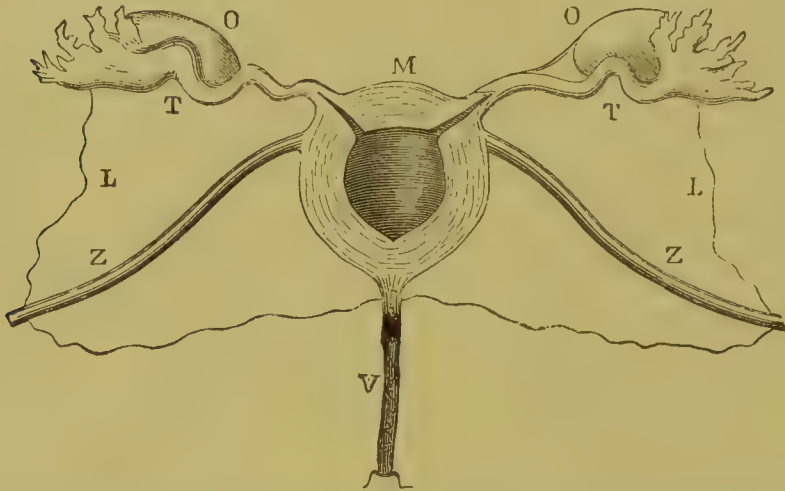


FIG. 213.—Globular hypogastric tumour, with lateral appendages, produced by dilatation and hypertrophy of the womb *M* and of the Fallopian tubes *T T*, owing to retention of the menses from complete absence of the vagina *V*. Retention of the menses for seven years, puncture by the rectum, followed by purulent peritonitis causing death on the eighth day (after Fürst, of Leipsic).

tumour from acquiring at these points the dimensions which it attains in the vagina and in the cervical and uterine cavities. Its position is generally median, but it may be more or less inclined and even lateral.

As a rule this tumour is single, but in some cases it is double and even triple. These two or three tumours depend either on division of the uterus (Leroy, Décès, Rokitansky, Nélaton) or on dilatation of the Fallopian tubes by menstrual blood. In the latter case, which is important in reference to the prognosis, the principal tumour is bounded on one or both sides by an ovoid, cylindrical or vermiform swelling, soft and rolling under the finger.

This tumour is resistant or doughy to the touch, communicating a sensation of fluctuation; but the counter-stroke produced by the

¹ Tumours formed by the retention and accumulation of fluids in the imperforate uterus or vagina may acquire so great a size in the fœtus as to form an obstacle to parturition. (Dr Gervis and Dr Gomer Davies, quoted by Alph. Hergott, *Des maladies fœtales qui peuvent faire obstacle à l'accouchement*, p. 225. Thèse de concours. Paris, 1878.)

displaced fluid is not distinct as in ascites or in a cystic tumour. The fluctuation is all the more obscure because the uterine walls are not only distended but hypertrophied by the repetition of expulsive contractions caused by the retention of the blood (Figs. 213 and 214).

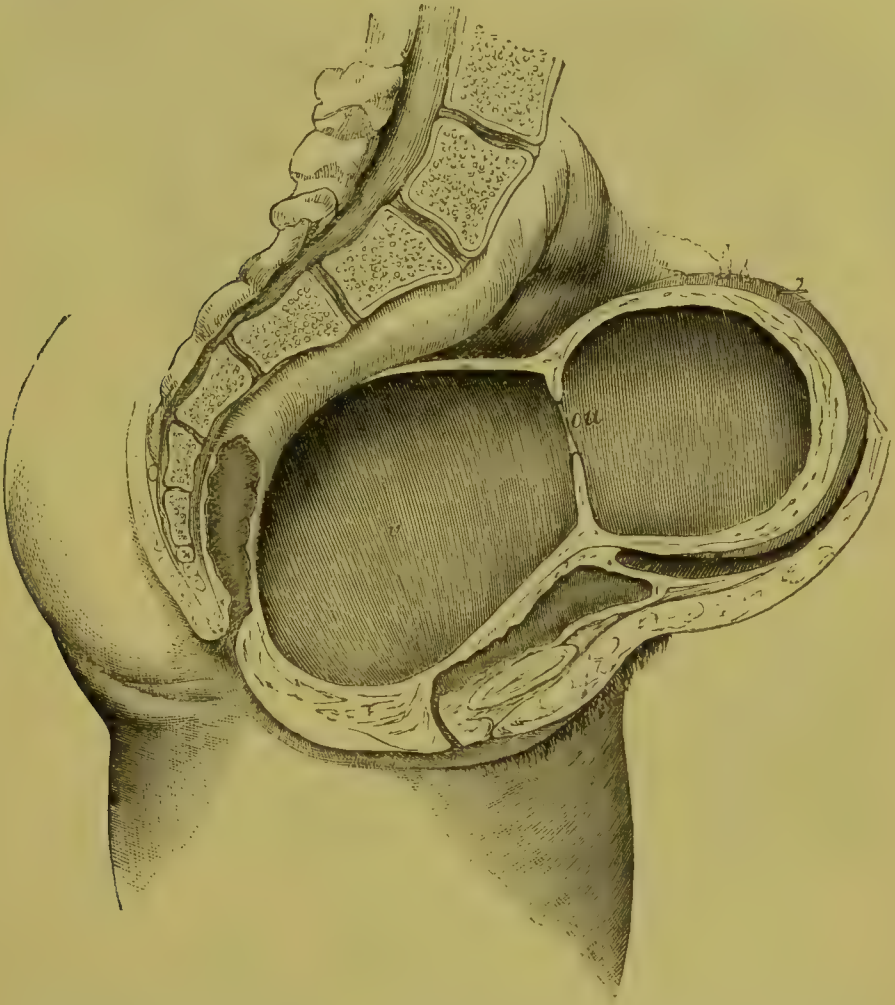


FIG. 214.—Hypogastric tumour in the form of a pilgrim's gourd, caused by retention of the menses owing to imperforation of the vulva; preparation in the Radcliffe Museum at Oxford; case described by Tuckwell, $\frac{1}{3}$ natural size; *v*, distended vagina; *ou*, os uteri and cavity of uterus above it equally distended; atresia of the vulva (after Barnes).

Lateral hæmatometra.—The most difficult cases to diagnose are those of *complex atresia*, i.e. *occlusion of one of the vaginae or uteri forming part of a duplex sexual system*; because whilst the patient has all the symptoms of dysmenorrhœa, she nevertheless has her periods, and this fact removes from the mind of the physician all idea of retention of the menses. However, after having been apprised of the repeated occurrence of this anatomo-pathological anomaly, and having had the opportunity of seeing a drawing of it as given here, it would be inexcusable to ignore the possibility of its ex-

istence. These imperforations of one of the halves of a double genital canal have been met with 11 times in the uterine canal and 23 times in the vagina. Out of 28 cases they have been observed 20

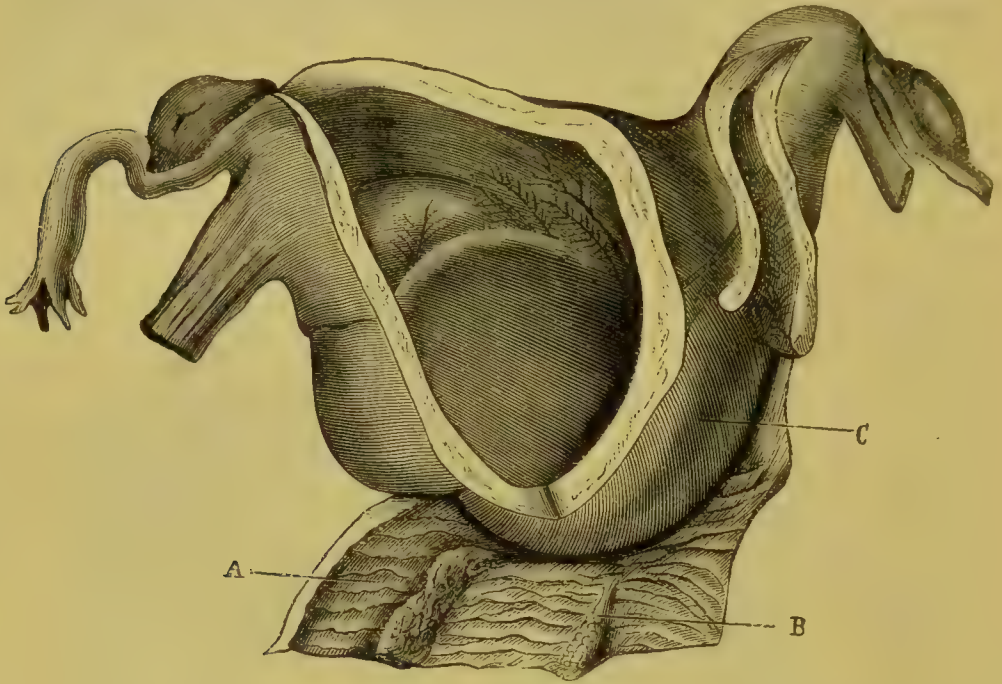


FIG. 215.—Max Jacquet, Ueber Haematometra bei Uterus duplex (*Zeitschrift für Geburtshülfe und Frauenkrankheiten*, Bd. i, S. 134. Stuttgart, 1875). Double uterus in a girl of fourteen who had menstruated for some months, and who succumbed to peritonitis caused by retention of the menses in the right uterus which was greatly distended, and in which a thin spot c seemed to correspond to the atresia of the cervix of the same size. The left uterus, which is open, shows the *arbor vitæ*; A B, the longitudinal folds of the vagina, greater behind A than before B; vestiges of the partition between the primitive vaginæ.

times on the right and 8 times on the left. They were all cases of *uterus bicornis*, except two that were bilocular or divided. The most striking symptoms are: manifestation of the pains of menstrual retention coinciding with discharge of the catamenia, and the presence of a tumour occupying one side of the hypogastrium and a large part of the pelvic cavity, hindering walking, and causing dysuria or retention of the urine, sometimes fluctuating, easily defined as to its superior limits, sometimes reaching the vulva below and pushing the vaginal portion of the cervix of the other side upwards, or remaining in the pelvis on one side only, pushing the cervix of the other uterus to one side, or forming, on a level with the urethra (the seat of the atresia) a spherical tumour which projects into one of the vaginal *culs-de-sac*, and presses laterally against the open cornu, which it pushes upwards and to one side till it appears to be almost surrounded by it (Fig. 218). Any pressure on the hypogastric tumour is transmitted to the vaginal portion and *vice-versâ*.¹

¹ Puech, *Annales de Gynécologie*, April, June, July, August, 1875.

These symptoms and catheterism of the open cornu ought to prevent any error in diagnosis. Nevertheless, unilateral hæmatometra has been taken for congestive dysmenorrhœa, peri-uterine hæmatocele, and even an ovarian cyst.¹ Sometimes it is water instead of blood which fills the imperforate cavity, sometimes it is pus, sometimes the tumour is uterine, but oftener vagino-uterine.²

These are the most usual symptoms, but sometimes there are others in addition. In the way of *complications* we may mention: 1, discharges by the genital canals; 2, deviation of the menses; 3, hysteria; 4, chlorosis; 5, vagino- and utero-vesical fistulæ.

The *modes of termination* constitute an element in the diagnosis. They are varied and depend on the disturbances which the presence of an obstacle causes in menstruation. 1. Deviation of the menses may be more than a symptom; it may also be a mode of termination of the retention. I have had a patient in whom this deviation persisted throughout life. 2. The obstacle may give way, either by bursting (8 cases) or by gangrene (4 cases). As a rule, the former mode occurs where the obstacle is thin, and it takes place after violent colics. I have once seen it. 3. The organs containing the menstrual blood are dilated, their walls become thin and in the end give way. When the uterus is the seat of this rupture, death may be the immediate consequence; three cases of the kind have been observed. When it is the vagina or the lower part of the cervix, it is possible for the menstrual blood to be discharged by the bladder; such cases have been observed by Fréteau, Boyer and Désormeaux. 4. Dilatation of the Fallopian tubes by the menstrual blood takes place sooner or later. It is caused by the accumulation of blood and the uterine contractions forcing the orifices of the Fallopian tubes, which then remain open, owing to their loss of contractility. It is in such cases that the sound, when the obstacle has been removed, has been known to enter the uterus and penetrate into the Fallopian tube. The tumour thus formed in the Fallopian tube, especially if in the external half, may attain considerable proportions. The blood thus accumulated may be expelled, either by flowing backwards through the ostia uterina (2 cases) or by exuding through the fimbriated extremity into the peritoneum (14 cases). Discharge by the uterine orifices necessitates previous evacuation of the uterus; it has only been observed by Barnotte and Amussat. Discharge by the fimbriated extremity is generally fatal. Amussat and Bernutz alone have seen patients recover, thanks to the

¹ Carl Staude, "*Hæmatometra und Hæmatokolpos bei zweigetheiltem Utero-vaginal Canale. Verwechselung mit Tumor Ovarii. Versuch der Ovariectomie, Heilung.*" The patient died accidentally six months afterwards, when the uterine tumour, caused by retention of the menses, was discovered. *Zeitschrift für Geburtsh. und Frauenkrankh.*, Bd. i, S. 338. Stuttgart, 1875.

² W. A. Freund, *Hæmatometra und Hæmatokolpos lateralis bei Atresia eines rudimentären Scheidenkanals eines Uterus duplex*, in *Beiträge zur Geburtsh. und Gynaekologie*, Bd. i, S. 26. Berlin, 1872. *Id., id., Beiträge zur Pathologie des doppelten Genitalkanals*, in *Zeitschrift für Geburtsh. und Gynaekologie*, Bd. i, S. 231. Stuttgart, 1877.—Breisky, *Pyomètre et pyokolpe latéral, suite d'atresie d'une moitié de vagin rudimentaire sur un uterus septus*. *Archiv f. Gynaekologie*, Bd. ii, S. 24. Berlin, 1871.

encysting of the blood and to its expulsion through the rectum. As for the other cases recorded, death occurred so rapidly as to leave no time for the development of peritonitis. Such are the cases of imperforate hymen, related by Brodie, Moore and Paget; by Boyer, Décès, de Haen, Locatelli, Maisonneuve (2 cases), Munck, of vaginal atresia; by Hemman and de Pauly of atresia of the cervix. I have seen a woman succumb rapidly to peritonitis caused by atresia of the cervix.

In lateral hæmatometra the natural terminations are similar to the preceding: spontaneous rupture of the obstacle, perforation of the septum between the two Fallopian tubes (Fig. 216), passage of the

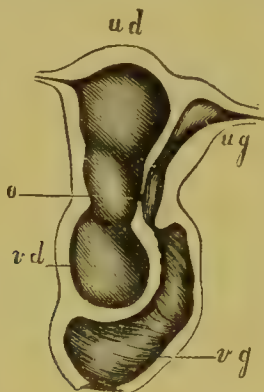


FIG. 216.—Breisky, Pyometra and Pyokolpos due to atresia of one half of a rudimentary vagina in a uterus septus. *Archiv für Gynaekologie*, Bd. ii, S. 48. Berlin, 1871. *vd*, right vagina; *ud*, right uterus filled with pus; *vg*, left vagina; *ug*, left uterus; *o*, orifice through which the pus retained in the right uterus was discharged externally through the left uterus and vagina.

blood from the horn into the Fallopian tube, and from this into the peritoneal cavity, peritonitis caused by repeated crises, or finally, passage of the fluid into the normal uterus and vagina, and subsequent cure.

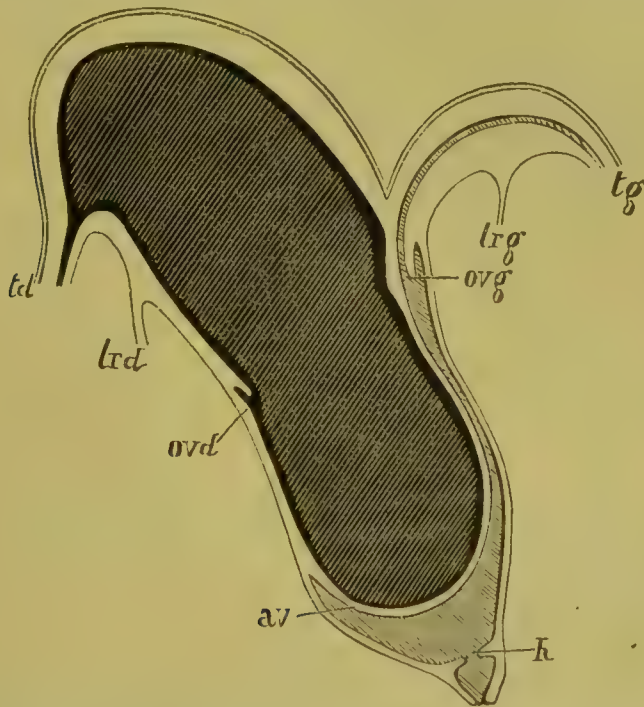
In all these cases consumption may supervene and cause death; for dyspepsia, vomiting, continued pain and constant lessening of the interval between the crises, wear out the best constitution and lead to marasmus. Occasionally the menopause, by putting a stop to the discharge, or rather to the sanguineous fluxion, at the same time puts an end to all accidents.

To sum up, a cure can only take place when the obstacle gives way. Tolerance is established when the menses are deviated, when amenorrhœa supervenes, or when the menopause is established. Apart from these exceptions, there is always danger of death, and as nothing affords any indication as to which of these terminations will occur, the wisest course is to avoid all by opportune intervention.

Differential diagnosis.—Without having any pathognomonic signs, strictly speaking, retention of the menses nevertheless causes a number of characteristic symptoms, such as absence of all discharge, the coincidence in time between the commencement of the symptoms and the

expected advent of menstruation, the expulsive nature of the pains, their duration from three to eight days, and their recurrence after about a month's interval, their localisation in the loins, hypogastrium and perineum, and lastly, the appearance of a tumour either at the vulva or above the pubis, or in both places simultaneously.

When all these symptoms have been observed it is easy to diagnose atresia; but it is different when some are wanting or when they are not well marked. In such cases a number of unjustifiable mistakes are sometimes made: menstrual retention from atresia confounded with prolapsus uteri, sciatica, ascites, cystocele, uterine polypus, amenorrhœa, or even with pregnancy. Sometimes hæmatocele, pelvi-peritonitis and purulent tumours of the pelvis, ovarian cysts, hydatid cysts, fibroma, cancer and hydrometra may be mistaken for retention, and *vice versâ*. Amenorrhœa is not attended by periodical exacerbations, nor, above all, by a hypogastric tumour. In pregnancy the knowledge of the antecedents, the mode of development of the tumour, the state of the areola of the breasts, especially if the patient has never had children, the results of auscultation (negative in retention, positive in pregnancy) with the physical signs revealed by digital examination, are sufficient to establish the distinction. There is one feature common to hydrometra and hæmatometra, viz. occlusion of the cervix; but special and distinctive symptoms also always exist: hydrometra is consecutive to amenorrhœa, and has generally a slow commencement;



L. L. L. & CO. LTD. LONDON
MEDICAL SURGICAL SOCIETY

FIG. 217.—Freund of Breslau, two cases of lateral hæmatometra and hæmatokolpos from atresia of a rudimentary vaginal canal of double uterus. *Beiträge zur Geburtshilfe und Gynaekologie*, Bd. ii, Heft i, S. 26. Berlin, 1872. Vertical section: *td*, right Fallopian tube; *lrd*, right round ligament; *ovd*, right vaginal orifice; *av*, vaginal atresia; *tg*, left Fallopian tube; *lrg*, left round ligament; *ovg* left vaginal os; *h*, hymen.

accidental hæmatometra begins suddenly, and is preceded by a disease affecting the cervix. The course of development of the tumour is not identical—in the first it takes place without pain, and almost continuously; in the second it is painful, and is produced in monthly stages. Lastly, in the one there may be sanguineous discharge, in the other there is none.

As to the *differential diagnosis of various kinds of atresia*, a careful examination enables us to discover the special characteristics which I have already pointed out in describing their history. It will be

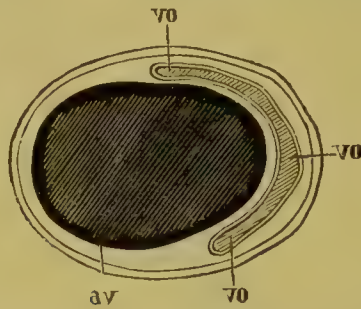


FIG. 218.—Id. horizontal section : *av*, vaginal atresia ; *vo*, left vagina open.

remembered that lateral tumors (hæmatometra, hydrometra or pyometra), in cases of double genital system usually project into the normal vagina or uterus (Fig. 218), so as to be partly covered by them on one side, and to jut out beyond them on the other, especially in the upper part corresponding to the cornu and to the Fallopian tube on the side of the seat of obliteration (Fig. 218).

Treatment.—Out of the great number of cases recorded there are eight only in which the breaking up of the tumour has occurred spontaneously. The age of the patients thus cured varies from 18 to 22. The time is that of a paroxysm: the necessary prelude, a series of violent colics. The seat of the obstacle was five times at the vulva,¹ twice at the vagina,² once at the cervix.³ In four cases only was this natural perforation produced by gangrene of the obstacle under the influence of continuous pressure of the accumulated blood and of uterine contractions. In that recorded by Allaire d'Héricy⁴ the symptoms had lasted for seventeen months; the tumour was the size

¹ Wier, *De prestigiis dæmonum*, lib. ii, cap. xxxviii.—Schenck, *Observationes medicæ rariores*. Lugduni, 1643, lib. iv, p. 532.—Bartholin, *Centur. v.*, Obs. xliii.—Eschenbach, *Obs. med. chir.*, p. 8.—Lafitte, *Revue thérapeutique du Midi*, t. x, p. 44.—Scanzoni, *op. cit.*, p. 476: "A girl of nineteen suffered for two years from severe dysmenorrhœa due to imperforate hymen, when during an attack of pain this membrane suddenly ruptured allowing the escape of about a kilogramme of fœtid and decomposed blood. Immediately after this accident we were called and ascertained that the rupture had taken place; the hymen hung down from the vagina in several irregular shreds."

² Delisle, *Journal général de médecine*, t. lxvi, p. 94. It may be admitted that the seat of the second obstacle was at the cervix.—Kiwisch, in Scanzoni, *op. cit.*, p. 487. The orifice in this case was irregular and funnel-shaped.

³ Puech, *op. cit.*, obs. xiv, p. 56.

⁴ *Gazette médicale de Paris*, 1832, p. 513.

of a small hen's egg, and the hymen presented two blackish points, the one at the centre, the other at the side; the latter opened first and gave issue to the contents. In that of Demaux¹ obliteration of the vagina had been preceded by a difficult labour, and sounds had to be used to dilate the opening which had formed in the centre as the result of sphacelus. In the two last² gangrene completed the operation which the surgeon had not the courage to finish. We cannot, therefore, count on the efforts of nature to bring about a happy termination to a disease the course of which is beset with dangers. We must not, however, conclude that operation is always indicated. We have to consider the real dangers incurred by operation, the still greater perils which may result from the progress of the disease, as well as the abolition of the reproductive functions which always occurs. These three elements of the question are evidently the three principal sources of indication, or contra-indication, to the active intervention of art. The elements furnished by the intensity of the disease, its seat and its nature, must also be taken into account. The more the organs have been distended by the menstrual blood and the more they have lost their power of contraction, the greater likelihood there is of metro-peritonitis and purulent infection finding a favorable field for development. Whatever the size of the tumour may be, if it is bordered by one or two small lateral tumours formed by the distension of the Fallopian tubes, we have reason to fear a fatal result; the operation, perilous as it may be, in this case is the only means of preventing death. With reference to the seat of atresia, imperforation of the hymen and membranous occlusion of the vagina and cervix may be classed together as the least dangerous forms; after them and in order of increasing gravity come partial absence of the vagina, complete absence of this organ, and lastly absence of the vagina with imperforation of the cervix. From another point of view operation as a rule is much more dangerous in acquired than in congenital atresia.

Whenever an operation is indicated it should be performed as soon as possible, as delay only aggravates the danger owing to the increasing dilatation of the uterus at every monthly period. Operation is only absolutely contra-indicated when the uterus is atrophied and there seems no likelihood that the menses will be established; before operating therefore we must ascertain that the uterus exists, and that the morbid symptoms are owing to distension of this organ and not to any other cause. Operation is also contra-indicated when the existence of vesical or rectal fistulæ allows the escape of the menses by the urethra or anus. In such cases intervention should only be resorted to when the operation is easy and the fistula small and susceptible of cure; here also, however, there is not strictly speaking retention, and therefore the operation is not urgent. The age of the patient may also be an absolute

¹ *Gazette des hôpitaux*, 1850, p. 567.

² Barth, *Gazette médicale de Strasbourg*, 1844, p. 221: Spontaneous cure after four unsuccessful operations.—Blandin, *Gazette médicale de Paris*, 1846, p. 57. Operation causing vesical fistula; spontaneous cure.

contra-indication; what may be attempted in the case of a young woman of twenty ought not to be thought of in the case of a woman of fifty. Nevertheless though, as a rule, it is wise to abstain when the menopause is established, or when the patient has reached forty and the menstrual periods have diminished in intensity, yet we ought to operate after this age when blood-letting and opium prove ineffectual and the tumour continues to progress; for women of fifty and upwards have succumbed in such cases to spontaneous rupture of the uterus.¹ With the exception of such cases operation is indicated, and the sooner it is had recourse to the better. Although Boyer,² Dupuytren,³ Capuron⁴ and Cazeaux⁵ have condemned it, it seems to me indicated within the limits just stated. The distension of the Fallopian tubes by the menstrual blood, although evidently a source of danger, is not a contra-indication: on the one hand the prospect of imminent death, on the other the success obtained by Amussat, Debrou and Barnotte, authorise active intervention. We should, however, warn the parents of the risk involved. The only real contra-indication is the extent of the obstacle, or rather the extent of the destructions, the length and narrowness of the vulvo-uterine cicatrix in cases of accidental obliteration, in short the insurmountable operative difficulties.

If the atresia has been discovered in childhood the most suitable time for operating is at puberty, just before the appearance of the menses. After menstruation is established the indication is to operate as soon as possible. Whatever the age of the patient may be, this operation, like all others on the uterus, should only be performed in the intercalary period, seven or eight days after menstruation; at this time the congestion is entirely dissipated, and the conditions are therefore the best possible for avoiding inflammation.

The treatment, essentially surgical, of retention of the menses includes two important indications:—(1) To give free passage to the blood retained above the obstacle; (2) to maintain the patency of the opening made.

We may *make an outlet for the discharge of the blood* in two ways, indirectly or directly. The *indirect method*, which consists in attacking the tumour through the abdomen, the bladder or the rectum, is only admissible in cases of complete absence of the vagina, where it is impossible to reach the uterus through the recto-vesical space. The best of these three indirect ways is evidently the rectum. I confess, however, that it seems to me more applicable to cases of atresia of the hymen or lower part of the vagina than to those of the uterus, and in this case it is easier to open the tumour directly through the vulva. Although this operation, which was performed for the first time unsuccessfully by Dubois,⁶ has been repeated in our days by Oldham,

¹ Duparque, *Traité des ruptures de la matrice*. 1839, p. 13, 14.

² *Traité des malad. chirurg.*, t. x, p. 447, 4e édit. Paris, 1831.

³ Quoted by Pigné, *Traité des chirurg.*, of Chélius, t. ii, p. 62.

⁴ *Bulletin de l'Acad. de méd.*, 13th Sept., 1839.

⁵ *Gazette des hôpitaux*. 1861, p. 31.

⁶ See Boyer, *Traité des malad. chirurg.*, t. x, p. 447.—Boivin et Dugès, op.

Baker-Brown, and Hastings-Hamilton, who penetrate from the rectum into the tumour by means of a curved trocar, I cannot refrain from remarking that the operator risks piercing the peritoneum twice, and that, in order to prevent the consequences of the blood remaining in the uterus or vagina, its effusion into the peritoneum is encouraged, whilst, even in case of success, all that is gained is a utero- or vagino-rectal fistula; with which, if it occurs spontaneously, we must be contented, but which is not desirable when gained at the risk of life.

The direct method consists in attacking the tumour through the vulva and in establishing a lasting communication between the one and the other. This method alone satisfies all indications, for, by preventing accidents, it brings the parts back to their natural condition.

Cauterisation has been tried, but without success, by Felix Plater¹ and Gaspard Bauhin.² Caustics in fact have inconveniences which are not compensated by any advantage; it is difficult to use them, and impossible to limit their action, and the orifice is made at the cost of a more or less considerable loss of substance and of the inevitable formation of cicatricial tissue. On the contrary, incision and tearing, either alone or aided by dilatation, are the most suitable means for opening up a vulvo-uterine passage, incisions or puncture sufficing for thin membranous occlusions, incision, dissection and dilatation being necessary for obliterations of considerable depth. As the modes of procedure vary according to the resistance of the obstacles, I will describe the manner of performing each operation successively.

The bladder having been emptied by means of a catheter, and the rectum by an enema, the patient should lie on her back on the edge of the bed, opposite a window, in the position required for examination by speculum, the pelvis raised, the thighs and legs flexed and apart. An anesthetic should be given, unless especially contra-indicated; and, in most of these operations, the bladder should be raised by means of a sound introduced into its cavity and the rectum should be drawn down by the index finger.

I. *Imperforate hymen*.—The plan which seems to me the best is the following, proposed by Puech.¹ Having made the hymen bulge out, the centre is seized with forceps, whilst the right hand, with curved scissors or bistoury, removes a circular piece of membrane. The genital organs are then explored with the index finger, a gutta-percha bougie of medium size being afterwards substituted for the finger to close the opening. By this means the blood is prevented from gushing out and the uterine and vaginal cavities are enabled to recover their normal condition, whilst the air, having greater difficulty in penetrating into the uterine cavity, exerts a less injurious influence on it. As a rule, this operation is not followed by any serious consequences; but we

cit., t. i, p. 272. Congenital absence of the vagina. Puncture by the rectum. Peritonitis ending in death.

¹ *Observationum*, lib. iii. Basileæ, 1614, lib. i, p. 241.

² *Theatrum anatomicum*. Paris, 1621, lib. i, cap. xxxix, p. 133.

³ Op. cit., p. 98.

must not forget that metro-peritonitis may occur and cause death, as has happened twice out of 135 operations.¹

II. *Atresia of the vagina*.—In cases of membranous imperforations, a trocar or straight bistoury is plunged into the obstacle, and incisions are made in various directions till the finger passes easily. In more extensive atresiæ there are various modes of procedure, but only two deserve description.

1. The plan followed by Amussat² in 1832 consists in more or less violent pressure exercised by the finger or a soft body, with the object of pressing the vulval mucous membrane into the groove corresponding to the entrance of the absent vagina. After a time this yields, and after several attempts, repeated at longer or shorter intervals, the tumour is reached, when the last barrier may be removed by the trocar. This plan is more seductive than perfect. It can neither be employed in accidental atresia, nor in cases where the rectal and vesical walls are separated by a tissue of much resistance. It is very slow. Amussat required six sittings and ten days to reach the uterus; Parey³ four sittings and thirteen days, besides which, after the second sitting, the sensibility was so great as to make the latter attempts very painful. The patient operated upon by Bernutz⁴ was discouraged after five attempts, in spite of her great desire to be cured.

2. Dupuytren's plan⁵ consists in the use of the bistoury, combined with separation of the cellular tissue. It is effected in a single sitting. The following is the description of it as modified by Puech.⁶ By means of a male catheter the bladder is kept raised. The index of the left hand is then passed as far into the intestine as possible to guide the bistoury and to protect the rectum. A transverse incision is then made in the centre of the obstacle, or in the vulval fossa if the vagina is entirely absent; when the cellular tissue is loose, the operator may, with the finger, catheter,⁷ or handle of the bistoury, separate the vesical and rectal walls till the tumour is reached; when it is thick or very resistant it must be carefully dissected, separating the tissues with the handle or the finger rather than cutting them, and when necessary cutting with a probe-pointed bistoury. The operator must proceed slowly and circumspectly, stopping occasionally to examine with the finger to ascertain how far he is from organs that must be avoided.

I shall merely mention electricity, as it has been said to possess the property of causing extensile in place of retractile cicatricial tissue; this however has not been proved. When the newly-formed canal

¹ Quesnay in his paper *Sur les vices des humeurs*, printed in the *Mémoires de l'Académie de chirurgie* (1743, pp. 58, 59), characterises the blood which issues from the vagina after operations for atresia of the hymen as being black, thick, often inodorous, but sometimes fœtid (De la Motte, *Éphémérides d'Allemagne*, Benivenius, Merch'ren, Aquapendente).

² *Gazette Médicale de Paris*, 1835, p. 785.

³ *Gazette des hôpitaux*, 1861, p. 69.

⁴ *Op. cit.*, t. i, p. 307.

⁵ Sabatier, *Thèses de Paris*, 1848, no. 68, p. 40.

⁶ *Op. cit.*, p. 106.

⁷ Fletcher, *Medico-surgical Notes and Illustrations*. London, 1831, p. 143.
—*Archiv. gén. de méd.*, 1835, t. vii, p. 549.

admits the index finger easily, and when a clearer perception of fluctuation apprises the surgeon of the proximity of the collection of blood, he may plunge the trocar into it, and the issue of a brown syrupy fluid will prove to him that he has succeeded. A small quantity of the fluid is allowed to escape by the canula. This little orifice will only be enlarged after some time to ensure the final result. A few days afterwards a gutta-percha catheter is to be introduced into the uterine cavity, and injections of tepid water with a few drops of carbolic acid are to be made through it. A small syringe should be used, and the injections should be made with great precaution. The dressing finished, the parts are sponged and wiped and the patient placed in bed, care being taken to protect the bedding from being soiled by the black blood and mucous discharge which will be excreted for some days.

This method is applicable to all cases; only the use of the finger or soft instruments may be limited according to circumstances, sometimes not being required at all. If it is logical to distinguish cases of this kind (the most serious, and those which cause most accidents), it is unnecessary, with Verneuil,¹ to adopt a different plan for them.

Accidents attending the operation.—Roonhuysen,² Benevoli,³ Liston,⁴ the surgeon quoted by Dieffenbach⁵ and Barth⁶ were obliged to leave the operation unfinished; Roonhuysen and the surgeon quoted by Dieffenbach because they had involved the rectum and the others from want of courage. On one occasion I was unable to terminate an operation of this kind. The blending of the bladder and rectum was so complete at a certain depth that it would have been imprudent to have continued, for it was impossible to attempt to separate the one from the other. The menstrual retention was caused by a cicatricial occlusion of the whole vagina consecutive to gangrenous suppuration after a confinement. The patient was stout, extremely sensitive with regard to the consequences of her infirmity, and threatened by the accidents which often accompany retention. From that time the symptoms were gradually mitigated, and although the menstrual molimen and ovarian activity were more or less felt every month, there was no accumulation of blood in the uterus, no deviation of the menses, nor any other pathological phenomenon, thanks to the palliative treatment prescribed and to the progressive tolerance of the organism.

The bladder has been injured three times: in one case a cure was effected; in another a vesico-vaginal fistula was formed which Blandin could not cure; and another time (de Haen), apart from the fistula,

¹ *Rapport à la Société de chirurgie sur l'opération de M. Patry* (*Gazette des hôpitaux*. 1861, p. 69).

² *Observ. med. rariores Gerardi Blasii*. Amstelodami, 1677, p. 30.

³ Related by Chambon and by Colombat.

⁴ *Gaz. des hôpitaux*, 1839, p. 183.

⁵ Related by Verneuil, *Gaz. des hôp.*, 1861, p. 31.

⁶ *Gazette méd. de Strasbourg*, 1844, p. 222.

death occurred by the effusion of menstrual blood into the peritoneum through the Fallopian tubes.

Hæmorrhage is rarely serious; but it may become troublesome. This has led Camerarius, Voisin and Guérin to make several short operations. In this case it is necessary in order not to lose the benefit of the first incisions, to insert a foreign body, or even a dilator, in the canal that has been hollowed out.

The consecutive accidents which may occur are varied: metritis, inflammation of the Fallopian tubes, peritonitis, and even putrid infection. Out of 66 operations there were 6 cases of death due to the three last diseases.

I am convinced that, in accidental obliterations due to puerperal gangrene of the vagina, the tendency of inflammations to assume the gangrenous character may be the cause of fatal symptoms, just as it produced the first accident and the deformity which necessitated the operation. I lost a patient in this way. After great difficulties, and even a little tearing of the peritoneal *cul-de-sac* in front of the rectum, I reached the uterus, and things progressed so well for some days that we had hopes of success, when, concurrently with a slight attack of peritonitis easily subdued by treatment, gangrene of the walls of the new canal showed itself, which yielded to no tonic, nor to any injection detersive, antiseptic, stimulating, nor cathartic, and which finally caused death on the fifteenth day.

Relapse has been observed four times. It is due to the insufficiency of the operation, to inflammation of the parts, or to neglect of dressing. Contraction of the canal due to the same causes has been observed nine times.

To sum up, the results are as follows:—Out of 28 operations for congenital atresia 2 were not terminated, and 2 had to be repeated owing to relapses. There were 6 deaths, 4 of which were owing to the reflux of uterine blood; leaving these out of the calculation, there were 2 deaths in 24 cases. Out of 33 cases of accidental atresia, 8 operations were not terminated or had to be repeated; there were 6 deaths, one of which was owing to a reflux of uterine blood, and another to intercurrent pleurisy; putting these aside there remain 4 deaths in 31 cases, a greater mortality than in congenital atresia.

3. The author's method. I usually prefer rapid operation with the bistoury for accidental atresia; but for congenital atresia I greatly prefer the slow operation by means of small incisions combined with the use of sponge tents of gradually increasing size, and the prolonged issue of blood drop by drop.¹

¹ I have lately had occasion to congratulate myself on the success of this method in a young lady suffering from vaginal atresia. Sponge tents introduced into small incisions made every week of increasing depth allowed of my reaching the cervix which, owing to gradual cicatrisation of the wound after every operation, was at last drawn down to a level with the lower part of the vagina, the only part originally existing. Treatment lasted six months. It was followed some months afterwards by pregnancy which terminated in natural delivery. I performed the same operation successfully on a girl last

III. *Absence of vagina and imperforate cervix.*—In this kind of atresia, the difficulty is to free the cervix; to effect this the circumference of this organ should be detached from the surrounding parts with the finger or a soft instrument, after a vagina has been made. In order to prevent the recurrence of the uterine atresia, which Debrou and Patry have observed, Puech¹ recommends two operations. In the first, the vagina is to be formed; in the second, two months afterwards, the uterus is attacked. This, of course, is only possible when the symptoms are not alarming.

IV. *Atresia of the cervix.*—Different instruments may be used for attacking this obstacle: the straight or curved trocar, Fleurant's trocar, Friar Côme's pointed sound, the pharyngotome, Thomas's lithotome, Flamand's hysterotome, the ordinary straight and probe-pointed bistouries.

The first time I had occasion to perform this operation, about thirty years ago, I had a grooved sound made about 30 centimetres long, and fitted on to a wooden handle which was roughened on the side corresponding to the groove. I had also two bistouries made of the same length, one sharp-pointed, the other probe-pointed, both sharp only to the extent of 2 centimetres at the extremity. The cervix having been seized and fixed with the help of the speculum, I punctured it with the pointed bistoury at the spot where a depression was to be seen, and pushed the instrument in the direction of the axis of the cervix to the depth of 15 millimetres; I then introduced the grooved sound, and succeeded in making it penetrate into the uterine cavity, where I felt that it moved freely enough to make sure that it must have penetrated. I next introduced the probe-pointed bistoury into the groove of the sound, and having directed it alternately to both sides, before and behind, I made an incision of some millimetres in length and of about 3 centimetres in depth, around the artificial orifice first made. Except a slight discharge of red blood caused by the incisions, only a few drops of black, thick, viscid blood escaped; but I was not in the least surprised, for the body of the uterus was not dilated, and the patient suffered from a deviation of the menses, constituting a supplementary menstruation. No accident occurred; every day I introduced a gutta-percha sound of increasing size, and the patient was soon able to leave. I have since heard that her cure has proved permanent. Since that time a pointed sound has been invented, as well as various concealed hysterotomes with two blades, analogous to small lithotomes which I have already described as applicable to this operation, as well as to simple incision of the cervix in cases of constriction of the os. I have used them for three operations of the same kind; one in a virgin, for imperforation; two others for obliterations occurring after labour.

summer. After having reached the uterus with difficulty from the vulva through an imperforate vagina, I made a puncture by which all the blood issued from the uterus in fifteen days without any accident, thanks to frequent injections of hot water and carbolic acid. It was only later that I dilated the orifice.

¹ Op. cit., p. 118.

As to congenital constriction and contraction taking place after confinements, they occur very frequently, as we shall see when considering mechanical dysmenorrhœa. In such cases, however, simple incision is often insufficient, and recourse must be had to one of the operations for autoplasty of the orifice, which I shall describe when we come to the surgical treatment of dysmenorrhœa. Usually the operation ought to be performed in the following way: the cervix is brought into view and fixed by a Fergusson's speculum; then with a narrow-pointed bistoury a puncture is made at the spot where a depression indicates the primitive or probable position of the meatus. We have reason to believe that the uterine cavity is reached when there is a sensation of resistance overcome, and at the same time there oozes out a drop of brown, syrupy fluid. I do not enlarge the orifice by small incisions made in every direction, nor do I allow the accumulated fluid to escape till much later. I introduce every day a gutta-percha sound into the uterine cavity, through which I inject small quantities of hot water and carbolic acid. If puncture and incisions are insufficient recourse must be had to autoplasty.

The immediate accidents are *nil*, and the consecutive accidents are identical with those I have described under vaginal atresia; peritonitis and purulent infection have caused death three times. Relapse is frequent: seven patients have been cured only after a second operation, and in two a third operation was rendered necessary. It is on that account that autoplasty is often indispensable.

To sum up, 52 operations have been performed on 41 women, and among these there were 3 deaths and 38 permanent cures; 25 cures of congenital atresia and 2 deaths, 13 cures and 1 death in cases of accidental atresia.

Dressing.—It is not enough to operate and make an outlet for the menstrual retention; accidents must be prevented, and above all the artificial orifice or newly-made canal must be kept open.

In order to prevent accidents the discharge of the fluid must be regulated. Left to itself it is sometimes too rapid, giving rise to syncope and other accidents, due to the absence or exaggeration of uterine contraction; sometimes it is too slow, in which case the action of the air may cause putrefaction of the retained fluid. To prevent this antiseptic injections should be made twice a day for a fortnight. If decomposition of the blood, entrance of air, or suppuration give rise to a putrid discharge the uterine cavity should be gently washed out with disinfectants. *In order to preserve the artificial canal or orifice*, Puech¹ recommends the introduction of india-rubber bougies, the upper third of which should be covered with linen to prevent slipping. In a case of cervical atresia the bougie or sponge tent should be fixed with pledgets of lint, and the whole kept in place with a T bandage. The bougie and dressing should be changed every day or two till the discharge has ceased and the injections are unnecessary. In order to fit the vagina for fulfilling its functions, the canal ought to be dilated by applying sponge tents of gradually

¹ Op. cit., p. 126.

increasing size, after convalescence has been established. These applications should be suspended during the monthly period; but when it is over the canal should be examined by speculum, so as to destroy any adhesions that may have been formed. We can only be sure of the result when the walls of this canal are covered by a rose-coloured membrane analogous to the rest of the mucous membrane. As a rule, dilatation need not be continued longer than three or four months.

In a successful case the ulterior consequences are most favorable. By acting on the local state, making an outlet for the retained fluid, and removing the cause of the crises, the operation exercises a most beneficial influence on the general economy. The patient soon recovers her strength, menstruation is established and recurs regularly without producing either disturbance or pain. Sterility disappears with the cause which occasioned it, women sometimes becoming pregnant soon after the operation; and Puech has proved by numerous examples, that parturition may occur without laceration.

Can we count on the restitution of a true vagina? It is to be feared that the result will be but unsatisfactory when there is little or no vestige of vaginal mucous membrane between the uterus and vulva. Willaume de Metz¹ and Amussat obtained a fistula rather than a vagina. Even this result is useful because it allows menstruation to take place and puts a stop to the accidents of retention. But it cannot be hoped that the woman will thereby be fitted for marital intercourse, and still less for childbearing. Although very extraordinary cases of this kind have been recorded, we must not forget that serious accidents are to be feared at parturition, as in Debrou's² curious case, that the child may be expelled through the perineum, that the recto-vaginal septum may be torn, or that the uterine pains may diminish or cease altogether, &c. These dangers are especially to be feared after operations for accidental atresia, when cicatricial tissue replaces the destroyed vagina. It is said that electricity prevents the formation of this retractile tissue, but hitherto this fact has not been placed beyond doubt.

If portions of the vagina are left, *i.e.* of mucous membrane which can be reunited, permitting the re-establishment of a distensible canal between the uterus and vulva, we may hope that in spite of cicatricial tissue and partial contractions following suppuration after the operation, there may be a sufficiency of dilatable material to enable it to fulfil its functions though in an imperfect manner. There are many cases, however, which, though calling for operation, in order

¹ *Revue médicale française et étrangère*, 1826, t. iii, p. 168.

² Fibrous coarctation of the whole vagina; imperforation of the cervix. The symptoms began at seventeen. At nineteen distension of the uterus and right Fallopian tube. First operation: establishment of the vaginal canal and of the uterine orifice. Relapse after two months. Second operation followed by complete success. Pregnancy, labour at natural term, eclampsia. Application of forceps; child stillborn. Fatal peritonitis (*Gazette médicale de Paris*, 1851, p. 32).

to prevent the fatal results of retention, yet demand that we should warn the patient of the risk she would run by attempting a renewal of marital intercourse.

Lastly, in cases where it is not possible to undertake an operation, we must content ourselves with *palliative treatment*. This exclusively medical treatment ought indeed to be prescribed in every case, in order to prevent the accidents of retention till such time as the operation can be performed. It consists in fulfilling two indications which present themselves in the treatment of some other menstrual disorders, especially in uterine fluxion, deviation of the menses, in nervous dysmenorrhœa, in painful and violent uterine contractions, and in imminent peritonitis. These indications are: to revulse, or turn aside the fluxionary movement by bloodletting, purgatives and other revulsives employed methodically, in order to prevent distension of the uterus by a fresh flow of blood every month; to allay pain and irritability, and to diminish uterine contractions by opiates and narcotics, in the form of opiate enemata, chloroform, &c. Secondary indications may arise in different cases, according to the special symptoms which may present themselves.

DEVIATION OF THE MENSES AND SUPPLEMENTARY MENSTRUATION.

The various terms, *deviation of the menses*, *supplementary hæmorrhages*, *menses per aliena loca*, *per vias insolitas erumpentes*, *menorrhagia erronea*, *menstruatio vicaria*, *ectopie* or *hétérotopie menstruelle*, all signify a discharge of blood occurring at periodical times, from other organs than the uterus.¹ This abnormal phenomenon sometimes replaces the catamenia, at other times it occurs simultaneously with this discharge which, however, is then greatly diminished. The two varieties ought to be distinguished by different names: the term *deviation of the menses* is used when, in the absence of the catamenia, a more or less abundant hæmorrhage occurs almost every month from some other part of the body; *supplementary menstruation* may be used in the same circumstances, but rather when an insignificant discharge occurs simultaneously from the uterus.

Amenorrhœa is the only disease which can produce this morbid condition. Menstrual retention very seldom does so, only four times in 258 cases.² The reason is, that, in amenorrhœa, it is not the defective evacuation, but the cessation of the fluxionary movement towards the uterus and its change of direction which can deviate the menses and produce hæmorrhage in some other part of the body after an unwonted fluxion and congestion. There may not even always be hæmorrhage; there may only be more or less sudden or durable fluxion towards an organ, congestion of its tissue, a slight sanguineous

¹ A. de Haller, *Elementa physiologia*, t. vii. Lausanne, 1778, lib. xxviii, sect. iii, § 14. *Quæ mensium locum tenent*. The great physiologist points out in a few lines all parts of the body by which the blood may be discharged when hindered from issuing by the uterus.

² Puech, *Acad. des sc.*, séance du 9 déc., 1861.

interstitial effusion or ecchymosis,¹ or the production of another discharge.²

This phenomenon attracted special attention in former ages, when there was a tendency to believe in the marvellous. If in those times people were disposed to be too credulous, in our days there is too great a reaction in the opposite direction.

Diagnosis.—There is not, strictly speaking, any part of the body from which supplementary menstrual hæmorrhage cannot take place. The tegumentary surfaces, the mucous membranes and the skin, seem to be the points towards which the menses most frequently deviate. The following are the various regions in which this phenomenon has been observed, according to 200 cases collected by Puech from various authors :

Scalp	6
Auditory canal	6
Eyes, eyelids, lachrymal carunculæ	10
Nasal epistaxis	18
Cheeks	3
Dental alveoli	10
Salivary glands, or buccal mucous membrane	4
Hæmoptysis	24
Hæmatemesis	32
Breasts	25
Trunk, axillæ, back, thoracic parietes	10
Umbilicus	5
Hæmaturia	8
Intestine, hæmorrhoids	10
Hands and fingers	7
Lower limbs	13
Various seats, wounds, ulcers, exutories	8

The above table shows that, whilst these hæmorrhages may be produced anywhere, they show a predilection for certain localities. For instance, the mucous membrane of the stomach, the breasts, the mucous membrane of the bronchi and of the nose. They may even take place from the roots of the nails. At other times they are discharged from varicose veins, from recent or old wounds, or from ulcers which resist cicatrisation in spite of all topical applications. I have seen them take place from the vagina and internal surface of the vulva. At other times they are produced from various parts of the body, either simultaneously or separately and alternatively. Pinel has related a case of this kind, and Gendrin another, to which I shall

¹ Torthe (Louis) relates a case he saw at the Hôpital Saint-Antoine of *purpura hæmorrhagica* replacing menstrual hæmorrhage. He has collected nine cases from different authors showing that subcutaneous sanguineous extravasations, ecchymoses, and petechiæ resembling purpura, sometimes with sometimes without external hæmorrhage, constitute a well-marked form of menstrual deviation (*D'une forme rare de déviation menstruelle*. Thèses de Paris, 1877, No. 496).

² Sénator (*Berlin Klin. Wochens.*, 16 Dec., 1872, No. 57) mentions four cases of women in whom menstruation was irregular, and who suffered periodically every month from an attack of jaundice, which ceased on the reappearance of the catamenia. Fasbender (*Id.*, *Ibid.*, April 20 and June 1, 1875) mentions two other cases; the menses were not suppressed, but only diminished.

afterwards refer. Jacquemier and Lissner have observed fluctuating sanguineous tumours developed periodically at the surface of the thighs. I have myself observed a case of this kind.¹ This supplementary menstrual hæmorrhage occurs always from the mucous membrane and the skin, more frequently from the former, because it is more vascular, and because the epithelium offers less resistance than the skin. Although the hæmorrhage is produced periodically, the blood is not always evacuated at every menstruation; it may accumulate in a hollow organ, to be discharged at a later period. I knew a maiden lady in whom for a long time supplementary hæmorrhage took place into the stomach; but the blood often remained for several months before being ejected. At every monthly period there occurred very characteristic critical phenomena with serious disorders of the digestion. After some months these disorders acquired greater intensity, and it was necessary to have recourse to bleeding to put a stop to the spasm and to provoke vomiting. In the matter vomited there were various layers, evidently superimposed, from the purest blood, to older, denser clots, some decomposed and in a state analogous to putrefaction. It was impossible to doubt that these various layers were the result of former successive hæmorrhages produced at epochs corresponding to the monthly periods.

The predisposing causes, general or local, are very obscure. The circumstances under which these hæmorrhages occur vary in each woman, and yet when we examine authenticated cases they have certain symptoms in common. As a rule the women so affected have an extremely sensitive nervous system; others are hysterical. The age at which these phenomena occur varies: they are generally noticed soon after puberty, or at the approach of the menopause. Tueffard² relates a very uncommon case, in which the hæmorrhage appeared for the first time at fifty-six, six years after the menopause; it occurred regularly every month by the breasts, the discharge of blood lasting eight days, accompanied by the general phenomena of menstruation, and lasting for a year up to the time when the case was published.

As a rule the uterus is healthy; sometimes, however, it is more or less deranged. Puech has met with menstrual deviation eleven times in women in whom the genital canals were closed congenitally or accidentally; and forty-two times in women having a foetal uterus or congenital absence of this organ,³ a new proof of the importance of the ovary in producing menstruation.

The hæmorrhage generally occurs after sudden suppression of the catamenia, produced by a violent moral emotion or by some strong physical impression, such as would be produced, for example, by

¹ Puech, *Mémoire sur les Atrésies des voies génitales de la femme*.

² *Union médicale*, 30 Nov., 1872.

³ Brown has lately published a case of supplementary epistaxis in a girl, in whom the vagina was reduced to a *cul-de-sac* and the uterus to two horns (*American Journal of Med. Science*, p. 575, 1872). I have also found complete absence of the uterus and upper half of the vagina in a girl who had supplementary epistaxis without ever having menstruated; a painful swelling of one ovary was felt every month through the rectum, a little to the right.

sudden immersion in cold water. At other times the menses are only retarded or difficult, when after an insignificant accidental cause, or even without apparent cause, there occurs at the time when the catamenia ought to appear a sanguineous fluxion towards the region or organ naturally or accidentally predisposed to these hæmorrhages.

Various explanations have been given of deviation of the menses. Some have thought, with Bordeu, Vigarous, &c., that this phenomenon is produced by an effort of the womb in virtue of the active influence which this organ exercises on other parts of the body. Others have considered it as independent of the action of the uterus, believing it to be the result of the action of the *vis medicatrix* provoking this phenomenon in order to replace that which is wanting, and to which the economy is already accustomed. Others again have invoked the theory of metastasis to explain the fact; whilst some deny all connection between menstruation and these hæmorrhages, which they believe to be simply congestive. Scanzoni¹ has revived an explanation of this phenomenon which we can only partially accept. These hæmorrhages, he says, having their seat in organs independent of those of generation, are always occasioned by a predisposition resulting from an anomaly of structure of these organs—an anomaly consisting principally in an unusual thinness and great fragility of the vessels. Under the influence of the general vascular excitement manifested in the majority of women at the monthly period, the blood makes a passage for itself externally by the parts in which the abnormal weakness of the vessels offers least resistance.² The hæmorrhage which results acts on the genital organs in the way of revulsive bloodletting. If it is abundant enough to put a complete stop to uterine congestion there will be no discharge from the womb; if, on the contrary, it is scanty the supplementary hæmorrhage may be accompanied by a slight oozing of blood from the genital organs.

The connection of these hæmorrhages with menstruation cannot be denied; but we cannot be satisfied with the explanation of a so-called metastasis of blood to another organ, in the way the ancients understood it, and which the figurative expression of *deviated menstruation* would imply if taken literally. Is it not merely a phenomenon of reflex action, in consequence of which the fluxionary movement, finding an obstacle in the uterus, terminates in another organ and produces an abnormal hæmorrhage? The predisposition of the organ, its relatively inferior power of resistance to morbid attacks, would determine the question of locality.³

The influence exercised, by supplementary menstruation on uterine menstruation varies according to the date of the amenorrhœa, and accord-

¹ Op. cit., p. 319.

² There is something true, as regards the seat of deviated menstruation, in the choice of the place offering least resistance; only we must not be content with the admission that these hæmorrhagiparous organs are places offering least vascular resistance, they must rather be regarded as tissues or organs offering least resistance to any morbid influence in general.

³ Lorey adopts this pathogeny (*Des vomissements de sang supplémentaire*, &c. *Thèses de Paris*, 1875).

ing to the existence or absence of fluxion towards the uterus. If the amenorrhœa is recent and is produced by a sudden suppression, Scanzoni's explanation is undoubtedly correct; I have lately seen a girl who has had hæmoptysis under such circumstances; in such a case the catamenia may return the following month; the fluxion towards the lungs is not of sufficiently long standing to have taken root there, nor has the uterine fluxion been so completely mobilised as to be irremediably deviated. If, however, the amenorrhœa has lasted long, the conditions are reversed; the uterus is not only not congested, the fluxion is not even directed towards it; the abundance or scantiness of the supplementary hæmorrhage will have very little influence on the absence or presence of uterine hæmorrhage. On the other hand, of however old a date the amenorrhœa may be, if there is periodical fluxion towards the uterus and congestion of that organ, and especially if the functional disorder depends on defective evacuation, or derangement in the physiological manifestation of the third element of this function, the menstrual hæmorrhage may reappear in spite of the supplementary hæmorrhage.

It seems as if other excretions may be supplementary to menstrual hæmorrhage, *e.g.* hypersecretion of saliva, sweat, urine, intestinal mucus, diarrhœa, pus from ulcers, bile causing jaundice, &c. This appears less incredible to us than to Nonat¹ when we remember that diarrhœa often precedes menstruation, whilst leucorrhœa replaces it in chlorotic patients suffering from amenorrhœa.

Apart from these theories, we must find out whether there is the same connection between ovulation or spontaneous dehiscence and the supplementary hæmorrhage known as deviated menstruation that there is between periodical dehiscence and the concomitant uterine hæmorrhage, especially if the hæmorrhage, whatever may be its seat, occurs simultaneously with ovulation. Light has been thrown on this question by the interesting researches of Puech.² A very interesting autopsy showed that the formation of the *corpora lutea*, and especially the recent rupture of a Graafian vesicle may coincide with each supplementary hæmorrhage. It has also been proved that pregnancy may occur in patients affected with deviation of the menses.

The medical journal of Montpellier³ relates the case of a woman who had deviation of the menses, the discharge taking place through a fistula at the right side of the chest: pregnancy occurred putting a stop to this discharge, and after delivery menstruation took place normally.

Pauli⁴ knew a girl of seventeen in whom menstruation was replaced for eighteen months by bleeding of the nose. After her confinement menstruation reappeared regularly.

A woman of thirty, of delicate constitution, married for five years without having children, menstruated regularly to the age of twenty-

¹ Op. cit., p. 587.

² Académie des sciences. Séance du 13, avril, 1863.

³ Journ. de méd. de Montpellier, 2^e série, t. v, p. 212.

⁴ Gazette médicale, 1839, p. 636.

six. At that time menstruation ceased, and the woman believed herself to be pregnant. A few weeks afterwards a tumour was formed in the left hypochondriac region, which suppurated, burst, and was converted into a large ulcer fifteen centimetres square, from which a certain quantity of blood was discharged regularly every three or four weeks. The internal administration of emmenagogues, and the application of leeches were continued for some years without success. The woman at last became pregnant; the discharge of blood from the ulcer ceased, the wound cicatrised, and all passed off well. Two months after delivery normal menstruation recommenced and has continued regularly for five years.¹

In other cases which we have to relate pregnancy occurred in identical conditions, but was not followed by similar good results. Pregnancy and lactation, it is true, suspended the deviation, but only temporarily, the supplementary hæmorrhage reappearing after delivery or after lactation.—Catherine Vincent, who menstruated at nine years, had her monthly periods regularly during eight days of every month. She was hysterical, and when annoyed the catamenia were accompanied by the oozing of a sero-sanguineous discharge from the left breast and axilla. She became pregnant and was delivered at the seventh month. When menstruation was re-established the deviation also reappeared, and besides taking place from the parts above-mentioned, it occurred also from the skin of the left loin, from the back, the epigastrium, the left thigh, &c.²—A woman of weak constitution had after her first confinement a suppression for five months, then the catamenia were scanty for five or six months. At that time she had a considerable vomiting of blood, which was repeated at her monthly periods. Under these conditions she became pregnant; after delivery epistaxis occurred periodically, then hematemesis.³—A woman who had never menstruated except by hematemesis became pregnant; she had a good confinement, and suckled her child for some months. On being obliged to give up nursing the hematemesis returned. Afterwards she became dropsical, and died at the end of six months.⁴—A woman of thirty-one had a sudden suppression owing to a great fright she had experienced at her monthly period. The following month the catamenia hardly appeared, but there was expectoration of blood, which stopped spontaneously at the end of four days. From that time a more or less abundant discharge of blood occurred every month by the lungs. During her pregnancies menstruation and hemoptysis both ceased. After delivery, and even during lactation, the hemoptysis returned. Her health, however, was in no way affected.⁵—Brierre de Boismont tells of a woman who had deviation of the menses during her whole life in spite of a good confinement.—Molinetti knew a woman of great beauty who, till the age of fifty, had vomiting of blood every month in place of men-

¹ *Gazette médicale*, 1843, p. 532.—Obs. of Dr. Schwabe of Weimar.

² *Bulletin de la Société royale de médecine*.—Obs. of Dr. Bonfils.

³ Gendrin, *Traité philosophique de médecine pratique*, t. ii, p. 65.

⁴ *Journal de médecine*, 1757, t. vii, p. 384. —Obs. by Henry, Surgeon at Auxerre.

⁵ Hoffmann, t. ii, p. 207.

struation. This did not prevent her from having several children.¹—A woman of twenty-four, who had never menstruated, was subject from the age of fifteen to monthly epistaxis. She became pregnant, when the epistaxis disappeared, to return, however, with its previous regularity six weeks after her confinement.²

We see, therefore, that, except in cases of atresia or serious disorder of the uterus, deviation of the menses does not imply sterility; unless there be serious derangement of the economy ovulation continues to take place, and *rupture of the Graafian vesicle coincides with the period of the deviation*. Pregnancy is therefore possible and has been observed: it suspends the deviation, which, however, reappears after delivery or lactation. Deviation of the menses depends on the sanguineous fluxion being turned from the uterus by some cause to another organ predisposed, anatomically, physiologically or pathologically to become the *pars recipiens* of this fluxion. The recurrence and the periodicity of the phenomenon depend on the same causes of vital habit which kept up the periodicity of the uterine fluxion in its normal type.

Treatment.—Although compatible with health, and sometimes lasting from puberty to the menopause, deviation of the menses is nevertheless a pathological process; it is even a serious condition, as it has frequently caused death. It is more than a functional disorder, it is an essentially morbid state. It is useless to say that it is a beneficent effort of the *vis medicatrix*; it is not the less true that the hæmorrhage takes place by organs whose structure is not physiologically suited for its production, and that it is provoked and kept up by a special morbid condition. It is true that the economy becomes habituated to such a state, and tolerance may be established, nevertheless the health is not perfect till the supplementary hæmorrhage is replaced by normal menstruation. The prognosis varies according to several circumstances connected with the production of the hæmorrhages, their seat, &c. It is only serious when women who are already debilitated become more so by the prolongation and abundance of this loss. Death, as I have said, may result, and one of the most curious examples of this termination is that published by Fricker de Horb,³ in which a third attack of supplementary nasal epistaxis was followed by death. It is unnecessary to say that when hæmorrhage occurs in important organs the danger is increased.

Lastly, considered in themselves, and independently of the organs in which they are localised, supplementary hæmorrhages are always a troublesome accident. Except in cases of atresia, when they really prove beneficial by obviating uterine distension, they produce great inconvenience to the patient; they always indicate debility; they are extremely difficult to cure; they recur with extreme facility, and as

¹ Related by Berger, *Physiologie*, chap. xx, p. 252.

² Otto Obersaeur, *Virchow's Archiv*, 1872, vol. xlv, part 3.

³ *Medecin. Correspondenz-Blatt*, 1844, p. 510.—Dunlap (*New York Journ. of Medicine*, May, 1856), hæmorrhage from the gums; after cupping with the scarificator hæmorrhage ensued and carried off the patient.

they may change their seat or threaten an important organ, they ought to have the serious consideration of the physician. Cases are on record which have lasted during the whole of menstrual life, in spite of the most suitable treatment. De Mynck and Kluyskens¹ have related a case in which supplementary hæmorrhage from the breast, established at forty, terminated at fifty-eight in a cancer.

Treatment should be directed: 1st, to the amenorrhœa, by means previously described; 2nd, to the supplementary hæmorrhage, the abundance and seat of which may indicate various means in addition to hæmostatics, according to the speciality of the case. Nothing seems simpler than these indications, and yet the result is very uncertain.

The *treatment of amenorrhœa* in these cases consists principally in strengthening the constitution and in drawing to the uterus the hæmorrhagic molimen produced in other organs.

In order to fulfil the first indication, besides having recourse to therapeutical means, great attention should be paid to hygiene. In addition to a generous diet, exercise ought to be prescribed; if the patient is too weak to walk she ought to drive. Tonics should be given, and the best of these are quinine and iron.

To fulfil the second indication, to determine a fluxionary movement towards the uterus sufficiently strong to turn aside the abnormal fluxion, we may employ irritating topical applications, mustard, sitz baths, dry cupping, or with the scarificator, leeches to the inner and upper parts of the thighs, or one or two leeches to the cervix, or better still dry cupping which does not cause loss of blood, or, if necessary, intra-uterine dry cupping as advised by Simpson. The time chosen for beginning this treatment should be one or two days before the monthly period, and it should be continued the whole time it lasts, till the phenomena of abnormal fluxion have completely disappeared.

The *treatment of supplementary hæmorrhages* is less important, except when these discharges endanger life by their intensity. In such cases we must have recourse to the most powerful hæmostatics, and to the various means employed in the general treatment of hæmorrhages. We must, however, beware of trying to subdue these abnormal hæmorrhages energetically before having re-established normal menstruation: we should run the risk of producing them on another and more important organ. Forestus² and Chauffe³ relate cases of mental derangement and fatal cerebral apoplexy occurring as the result of such inopportune treatment.

¹ *Gazette méd. de Paris*, 1844, p. 595.

² *De cerebri morbo*, obs. 24.

³ *Des accidents et des maladies qui surviennent à la cessation de la menstruation*. Thèses de Paris, an x.

DYSMENORRHOEA

Dysmenorrhœa, according to its etymology, is *difficult menstruation*. This disease includes sluggishness and difficulty attending the catamenial discharge; irregular menstruation; pains, often very violent, usually preceding the sanguineous flow, sometimes accompanying it; menstrual evacuation in certain cases *nil*, in others insufficient, sometimes putting a stop to the pain on its first appearance, but sometimes occurring without any cessation of the pain, and occasionally acquiring an intensity which amounts to metrorrhagia.

Diagnosis.—Aran¹ has given a very exact description of dysmenorrhœa and of the distinctive features of this pathological condition. "The menses may be delayed in many women without affording cause for anxiety. Nothing but disorder of the general health or abnormal phenomena manifested in the genital economy need direct the attention to what otherwise is merely an anomaly of menstruation. In women suffering from chlorosis or from any serious disease of a debilitating nature, the menses are delayed more and more, till at last they cease altogether or only recur at long and irregular intervals; unless an effort is made by the organism to re-establish them, the physician ought to confine his attention to the chlorosis and to the debilitating pathological condition; delay in the appearance of the menses is only a cry of alarm, a signal of distress from the economy. They may, however, be delayed amid symptoms which betray an energetic effort for their re-establishment. Very often these symptoms do not differ much from those which coincide with the sudden or prolonged suppression of the catamenia; but, limited to the genital economy, or at least affecting it principally, they have with reason received the name of *dysmenorrhœa*. The symptoms of dysmenorrhœa, without being completely similar in all cases, yet have a common basis, viz. sluggishness, the difficulty with which the discharge is established each time, its irregularity; the presence of pain in the uterine system, and often in other of the organic systems for some hours or days before its appearance, pain which increases till the catamenia appear."

It is easy to understand that dysmenorrhœa is principally met with in girls, or in women who have never been pregnant. It is not enough to recognise its existence in the preceding symptoms; it is important further to distinguish between symptomatic and idiopathic dysmenorrhœa. In one sense all dysmenorrhœa is symptomatic of a morbid condition; but when this condition is not produced by any persistent organic derangement, and may disappear under the influence of a modification of the functions of innervation or of the vascular system, the dysmenorrhœa is called *idiopathic*; when, on the contrary, it is caused by contraction of the orifices or by a disorder of the mucous membrane requiring the intervention of the surgeon, it is called *symptomatic*.

¹ Op. cit., p. 300.

Dysmenorrhœa may be *symptomatic* of simple neuralgia, especially of lumbo-sacral neuralgia. It may also be symptomatic of an organic lesion depending on a nutritive alteration of local life, a fibrous tumour, polypus, hypertrophy, or the localisation of a diathetic affection such as cancer; but these lesions are complicated with menorrhagia and metrorrhagia more frequently than with dysmenorrhœa.

It may also be symptomatic of the formation of a clot in the uterine cavity; but this formation infers other lesions, such as coarctation of the cervical orifice or dilatation of the body of the womb. It is frequently symptomatic of uterine congestion, of acute or chronic uterine inflammation, of inflammation of the appendages, &c. Oftener still, it is symptomatic of ante flexion or retro flexion, and especially of torsion and contraction of the cervico-uterine canal, with partial retention of the menses, and of the monthly exfoliation followed by the periodical expulsion of the mucous membrane with the menstrual blood; hence the name of mechanical dysmenorrhœa and of membranous dysmenorrhœa to distinguish them from symptomatic dysmenorrhœa.

Idiopathic dysmenorrhœa is not connected with any cause foreign to menstruation itself. It is a functional irregularity affecting one or more of the three elements (fluxion, congestion, evacuation) of the catamenial act, and produced by a deterioration in the health and oftener in the local life of the organ, the nature of which may vary, allowing of the existence of differences in the essential cause of dysmenorrhœa, and consequently in the indications for treatment. With regard to this nature, all physicians recognise a nervous, spasmodic, hysteriform dysmenorrhœa, and a sanguineous, vascular, congestive form. The first depends on a state of pain, spasm, or neuralgia, which has led to its being called catamenial hysteralgia; the second depends principally on hyperæmia of the organ. The first consists specially in a derangement of the mode in which the fluxion takes place towards the organ, or of the mode in which the uterus is accessory to the evacuation of the fluid, under the influence of a derangement of innervation; the second, in an excess of congestion or an alteration in the manner in which it is produced, either that it is limited to the uterus or that it is extended to the Fallopian tubes and to the ovaries under the influence of a derangement of the circulation, and is vitiated in its mode of termination, even to the extent of producing hæmorrhagic centres in the Fallopian tube or in the ovary, and even hæmatocele.

1. *Idiopathic Dysmenorrhœa*

Differential diagnosis.—*Nervous dysmenorrhœa* is characterised by general and local disorders of innervation. Pain, spasm, neuralgia, developed in the uterus, in the uterine system, in the neighbouring organs, or even in the whole economy during menstruation, may equally play the part of essential cause of the disease, either separately, successively or simultaneously. These morbid conditions may be themselves under the dependence of various general or diathetic affections. However that may be, one of these elements, pain, spasm or neu-

ralgia may characterise this kind of dysmenorrhœa in an especial way.

As a rule the symptoms (discomfort, dyspepsia, cephalalgia, more or less violent lumbar and hypogastric pain) cease as soon as the menses appear, especially when the discharge is abundant; if, however, it only comes by drops (*stillicidium uteri* of Aëtius, *uterine strangury*, as contrasted with vesical strangury) they may persist for a longer or shorter time, and be the indication of a contraction of the cervix or of the *os internum* in which the nervous state seems specially to be localised; they may continue till the expulsion of a clot, which follows the incomplete sanguinolent or sero-sanguinolent discharge permitted by the imperfect permeability of the orifice, or which is accompanied by real menorrhagia, and announces the imminent cessation of the trouble and soon of menstruation itself. These symptoms may attain an extreme degree of intensity; I have seen girls shed tears, scream with pain, writhe in bed, roll on the ground. The violence of the pains may even react on the whole economy, causing nausea, vomiting, hysterical or epileptiform symptoms, &c.

Congestive dysmenorrhœa is characterised by the symptoms of congestion itself; discomfort, sense of pelvic fulness and weight, frequent micturition, heat and smarting in passing water, tenesmus, diarrhœa, swelling of the breasts. The symptoms may increase during the first few hours following the commencement of evacuation. The pain may increase so as to assume the character of the expulsive pains of labour, shooting down the groins and thighs, increasing at intervals and being accompanied by swelling of the hypogastrium, which cannot tolerate the touch of the hand or the contact of the clothes. At this period the pains may attain the violence and assume the form of those of nervous dysmenorrhœa, both in their local manifestation and in their reaction on the whole economy. Usually all these phenomena, the pain especially, disappear in proportion as the flow increases, unless the dysmenorrhœa has caused congestion of the uterus. At other times patients suffer from dull pelvic pain, not only all the time of the menstrual flow but also for some days after it has stopped.

It is the congestive form that is related to what Simpson¹ called *ovarian dysmenorrhœa*, which depends on the excess of congestion which causes the pain affecting the ovary rather than the uterus. The tension and sensitiveness of the ovaries are especially evident when these organs are displaced, either into the recto-vaginal *cul-de-sac* of the peritoneum, or into a hernial sac.² It is often met with in anæmic women as the result of defective equilibrium, of unequal distribution of blood. It is also frequently observed in prostitutes, in whom it is produced by venereal excesses, and it is sometimes met with in old maids and in young widows as a consequence of unsatisfied sexual instinct.

¹ Simpson, *op. cit.*, p. 411.

² In a case related by Oldham (*Philosophical Transactions*), in which the ovary descended by the inguinal canal into the labium, this organ swelled some days before the appearance of the menses, and the patient suffered greatly.

Treatment.—The indications differ according to the nature of the dysmenorrhœa.

In *nervous dysmenorrhœa* the two elements of pain and spasm are the two principal sources of indications. The element of neuralgia and the neuralgic form assumed by the pain may give rise to a third order of indications, to the special indications of neuralgia; these may exist apart from the menstrual period, they may vary according to the localisation of the neuralgia and the essential cause of the affection which keeps it up; frequently, however, the same medication is employed with equally good results in cases of neuralgia, properly so called, and of pain.

Pain is subdued by narcotics, and, if necessary, by anesthetics, such as the various preparations of opium, morphia, laudanum, henbane, belladonna, Indian hemp,¹ ether, chloroform, &c.

To prevent dysmenorrhœa, general baths for an hour or more should be prescribed, made with a decoction of bran or gelatine, and repeated daily for some days before the menses are expected; or sitz-baths with vaginal injections of a decoction of poppy-heads, or henbane and belladonna leaves; sedative embrocations of camphorated chamomile oil, laudanum, morphia, &c., should be applied to the hypogastrium, the groins, and the inner surface of the thighs, and care should be taken to keep the bowels open by means of emollient or laxative enemata. The moment that the catamenia appear, if there is dysmenorrhœic pain, opium or morphia should be given; perhaps the best method is to give a small enema of decoction of marshmallow or poppy-heads with from 10 to 20 drops of laudanum, which may be repeated. Bromide of potassium in doses of from 8 grains to 3j in the day, given before, during, and after menstruation sometimes produces beneficial effects. Hot linen, antispasmodic infusions, baths of bran or lime-tree flowers (3x in a bath) taken during menstruation may produce a sedative effect. Lastly, if the pain instead of yielding becomes excessive, inhalations of ether or chloroform may be tried, as advised by Bennet and Aran.

Spasm is more effectually subdued by the administration of anti-spasmodics given alone or associated with the sedatives just mentioned. Orange-flower water, ether, valerian, castoreum, musk, camphor, assafoetida, ammonia, hydropathy, have often put a stop to the most violent attacks of dysmenorrhœa. After having used baths and narcotics as preventive measures in the various forms above named, spasm may often be relieved by 25 to 30 drops of the following anti-spasmodic mixture: Sulphuric Ether, Tinct. Valerian., Tinct. Castor., Tinct. Op., āā 3j, with a tablespoonful of distilled orange-flower water in half a glass of *eau sucrée*, to be taken in spoonfuls every five minutes; a second dose may be given in an hour if required. I

¹ R. Lupulin, gr. 3;
Ext. Cannabis Ind., gr. $\frac{1}{5}$.
M. ft. pilula.

Sig. Take two pills in the morning and three in the evening as soon as the first symptoms appear (Debout, Aran).

have little confidence in musk and camphor, but if the above-named antispasmodics do not succeed, assafoetida may do good ($1\frac{1}{2}$ gr. in a pill given every hour, or 30 gr. suspended in yolk of egg in $3\frac{1}{2}$ oz. of decoction of poppy-heads as an enema); or 15 gr. of sesquicarbonate of ammonia, or a few drops of ammonia in a glass of water. Lastly, cold compresses on the hypogastrium, and other hydropathic applications often do great good when administered with caution.

When spasm especially affects the cervix, and it has been ascertained, by the pain which the sound causes, and by the difficulty of passing it through the internal os, that this orifice is probably contracted, we may try the effect of applying belladonna to the cervix, or we may inject a few drops of a solution of neutral sulphate of atropine (1 in 100) into the tissue; or douche this organ with carbolic acid or chloroform spray; or subdue the spasm by using the sound every day or every other day shortly before the monthly period, or even by introducing a gutta-percha sound or one of Simpson's solid pessaries of ivory or metal, and leaving it for a few hours. This, however, ought not to be employed unless we are sure of the absence of any inflammatory element, and only after having tested the susceptibility of the uterus by touch.

In *congestive dysmenorrhœa* there are two different sources of indication: an excess or defect of strength, hypersthenia, or asthenia, which, although opposite in character, may equally cause hyperæmia.

Hypersthenia, by increasing the intensity, energy, and persistency of fluxion, gives to congestion an importance which exceeds all physiological bounds, and brings about all the conditions of acute uterine congestion. The treatment of this morbid condition does not differ from that of congestion. *Asthenia*, implying defective fluxion or inertia of the uterus in excreting the menses, indicates the use of various stimulants of the uterine system, the value of which has already been discussed in the treatment of amenorrhœa: attractions, emmenagogues, cold douches, electricity, &c., or even the momentary or prolonged introduction of the sound or of solid stem pessaries into the uterine cavity.

In the interval between the monthly periods baths of bran or starch should be recommended, and especially exercise, living in the country, travelling, &c. West¹ and Simpson,² believing that dysmenorrhœa is caused by a rheumatic or gouty diathesis, recommend the use of tincture of colchicum associated with small doses of laudanum and antimonial wine. The colchicum is to be continued during the whole intercalary period, or the iodide of potassium may be substituted for it. Vichy water, the baths of Carlsbad or Wiesbaden, and other means indicated by the nature of the affection complete the treatment.

Lastly, the indications vary according to whether we are consulted during the crisis or in the intervals. In the first case, as Simpson³

¹ Op. cit., p. 87.

² Op. cit., p. 242.

³ Op. cit., p. 234.

wisely remarks, the treatment is simply *palliative*, our aim being to mitigate the paroxysm; in the second, it is *curative, radical* or *preventive*, the indication being to destroy the obstacle to the free evacuation of blood, or to prevent the return of the symptoms by various means, according as the dysmenorrhœa is nervous or congestive; not only by therapeutical means, but by hygiene, hydropathy, exercise on horseback and on foot, in short, by every means that can subdue the nervous irritability, or diminish the tendency to congestion by re-establishing equilibrium in the general circulation.

2. *Mechanical dysmenorrhœa*

This malady, which Simpson¹ describes under the name of *obstructive dysmenorrhœa*, and which some German authors designate as *stenosis of the cervix*, is nothing more than the series of symptoms developed by the energetic and painful contractions of the uterus in its endeavour to expel the product of menstruation through too narrow an orifice. It is in miniature the morbid state produced by complete retention.

Diagnosis.—The seat of contraction may be at the external os, throughout the cervico-uterine canal, or at the internal os; but usually it is at the external os. Mackintosh² called attention to this subject in 1823, and in 1826 proposed dilatation by bougies. The cause, which is always organic, is a congenital malformation, or a cicatrix following upon inflammation and ulceration of the cervix, laceration, or inopportune or unskilful cauterisations. When the deformity is congenital it is designated by the name of *narrow os*; when accidental it is called *contracted os*. The malady is characterised not only by the violence of the expulsive pain, uterine tenesmus and muscular contractions of the womb, but by the difficulty of evacuation, the blood escaping only in small quantities at intervals, sometimes under the form of narrow elongated clots mixed with fibrinous concretions. The tumefaction of the uterus by the blood, which has a difficulty in escaping, causes excessive congestion and irritation in the organ, which, according to Rigby,³ is sometimes transmitted to the ovary, producing pains in the groin and even causing menorrhagia. The examination of the uterus by speculum, and the introduction of a very fine sound, enables us to ascertain the reality of the impediment. When the contraction is at the internal os it is sometimes necessary to dilate the external orifice and cervical cavity previously with sponge tents in order to make sure of the fact. It seldom happens that the internal os is narrow when the external one is so, unless the narrowness of the former is more marked than that of the latter; for the impediment caused by the latter to the escape of the blood produces an accumulation of this fluid in the uterine cavity situated above, and so necessarily leads to the dilatation of the internal orifice. The narrowness of the os is the most common obstacle to menstrual excretion. It

¹ Op. cit., p. 245.

² *Practice of Physic*, 4th edit., t. ii, pp. 436, 481. London, 1836.

³ *Med. Times*, 25th October, 1851.

is always indicated by the circular form of this orifice (a point instead of a line), so much so, that circular form and narrowness of the orifice are almost synonymous, whilst narrowness of the os and dysmenorrhœa are almost invariably associated. If menstruation is scanty this narrowness may not have any troublesome consequences, and may even, to a certain point, pass unnoticed. This is what often occurs at the commencement of sexual life. If, however, the fluxionary movement and the quantity of menstrual blood are increased by the development of puberty or by marriage, the blood has difficulty in escaping, and clots are formed, which increase the difficulty. Expulsive pains are developed; sometimes uterine cramps are associated with these pains. Dysmenorrhœa is accompanied by retention, and assumes the form of spasmodic nervous dysmenorrhœa. By dint of contracting in order to expel the retained blood, by constant dilatation from this menstrual retention, the uterus is in a continual state of hyperæmia, and remains congested. The dysmenorrhœa takes the character of congestive dysmenorrhœa. This character is added or even substituted for those of retention or spasm. The congestion cannot long remain in the parenchyma with pain, contractions, &c., without producing inflammation in the tissue proper. On its side contact with the retained blood irritates the mucous membrane, and soon metritis (parenchymatous, congestive, sometimes hæmorrhagic) and endometritis (leucorrhœic, granular, &c.) are added to or substituted for the simple mechanical dysmenorrhœa which was present at the outset.



FIG. 219.

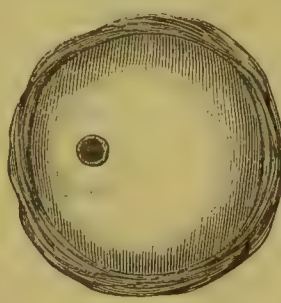


FIG. 220.

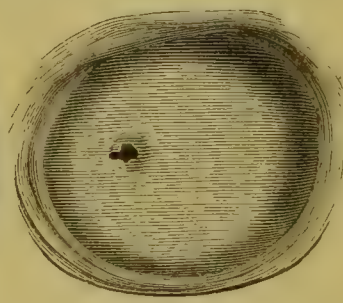


FIG. 221.

FIG. 219.—Narrow round os on a cervix of normal conformation already congested.

FIG. 220.—Narrow os, round and excentric, on a cervix of normal conformation more strongly congested.

FIG. 221.—Narrow os, round and excentric, on a cervix of normal conformation, still more congested than the others and inflamed.

Such is the course which the malady takes in married women. Thenceforwards symptoms of inflammation are added to those of mechanical dysmenorrhœa caused by narrowness of the os. These symptoms become aggravated, and are multiplied and complicated day by day. Sterility, which is equally a consequence of narrow os, is associated with the other symptoms, and helps to complete the diagnosis.

In virgins this mechanical dysmenorrhœa may cause the gradual diminution of the menstrual hæmorrhage till it ceases almost entirely, sometimes completely, when atrophy may be produced ; but this is rare.



FIG. 222.

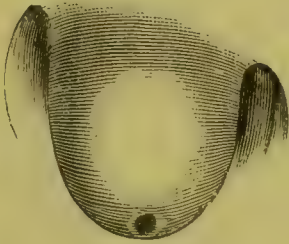


FIG. 223.

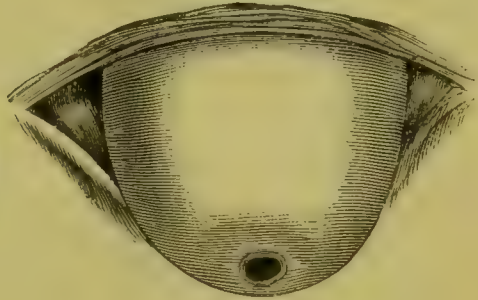


FIG. 224.

FIG. 222.—Congenitally narrow os on projecting cervix (after Sims).

FIG. 223.—Narrow os on a congested projecting cervix.

FIG. 224.—Narrow os on an inflamed and congested projecting cervix.

In married women, on the contrary, the phenomena previously described occur invariably ; whether the cervix is normal, slightly conical, or very conical and long, it gradually increases in volume, as seen in the accompanying figures. Besides increasing in size it becomes

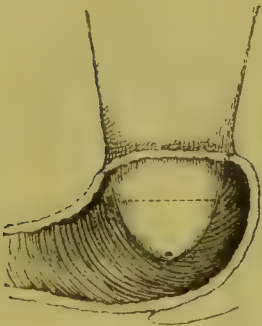


FIG. 225.



FIG. 226.



FIG. 227.

FIG. 225.—Narrow os on a long and conical cervix.

FIG. 226.—Narrow os on a long, conical and congested cervix.

FIG. 227.—Narrow os on a long, conical, congested and inflamed cervix.

dark red in colour, very sensitive and painful to the touch ; the orifice becomes slightly enlarged, sometimes assuming a cup form, but still remains insufficient for excretion. Therefore, in order to put a stop to these troubles it must be enlarged. The preceding figures show the changes which mechanical dysmenorrhœa produces in the cervix, whilst the figures which follow, taken from plaster casts, show the changes produced in the form of the uterine cavities. When the narrowness of the os is sufficient to cause retention of the menses or of mucus, the capacity of the uterine cavity may be increased, and even

the orifices of the Fallopian tubes may become sufficiently dilated to allow of the entrance of the sound.



FIG. 228.



FIG. 229.

FIG. 228.—Cast of the cavities of a normal uterus in a virgin of seventeen.
 FIG. 229.—Cast of the uterine cavities in a nullipara of twenty-five or thirty; marked constriction and elongation of the isthmus; enlargement of the cervical cavity; constriction of the external orifice.



FIG. 230.



FIG. 231.

FIG. 230.—Cast of the uterine cavities in a nullipara of forty-two; marked constriction of the *os externum*. Its form is the same as that of the virgin uterus, but the horns are larger, the isthmus is dilated, and owing to the constriction *d*, the upper segment of the body and the cervical cavity are more developed.

FIG. 231.—Cast of the uterine cavities in a multipara of thirty-five; constriction and torsion of the isthmus; permanent lateral deviation of the body on the cervix; *c*, well-marked enlargement of the body.

Torsion of the isthmus (Fig. 231) which, like other flexions, may either be primitive or occur after childbirth, is also a cause of mechanical dysmenorrhœa, to which I shall have occasion to refer when speaking of flexions.

Treatment.—It is important to treat mechanical dysmenorrhœa because the pains that it produces are intense and have no tendency to disappear naturally, because sterility is the invariable consequence, and the secondary effects disorder the health seriously. The treatment is mechanical, like the cause of the disease, and at the same time that it cures the dysmenorrhœa it also removes the inflammation and congestion which result, as well as the leucorrhœa and other disorders of the mucous membrane which owe their existence to the same cause, and very often it is followed by pregnancy. It is analogous to that employed in constrictions of other organs, consisting in dilatation (rapid or gradual), incision, or autoplasty of a new orifice.

1. *Dilatation.*—*Rapid dilatation* by means of intra-uterine forceps or speculum, the branches of which are introduced closed into the cervix and then opened quickly, has the disadvantage of causing lacerations. It is only admissible in cases of constriction caused by muscular contraction of the sphincter, with more than a sufficiency of mucous membrane externally as well as internally, that is, in spite of Ellinger's¹ assertion, in the minority of cases. *Gradual dilatation* is preferable. Of course, before using a dilator we must be sure that the dysmenorrhœa, and the constriction which causes it, are not connected with some other morbid condition. Among complications which contra-indicate the use of dilatation I may mention inflammation especially. If there be any uterine, peri-uterine, or ovarian phlegmasia it should be subdued by leeching and the use of anti-phlegistics; for in such cases there would be as great a danger in dilating as in cauterising the cervix. Mackintosh² used flexible bougies or metallic rods of gradually increasing volume; Rigby a dilator with steel blades, which were opened and left for some time in the cervix; Raynaud, of Montauban,³ conical wax bougies, by means of which he obtained pregnancy in two very interesting cases of dysmenorrhœa and sterility; Simpson metallic stems of gradually increasing size, supported by an oval bulb, which rests on the posterior wall of the vagina and keeps the instrument in place without causing fatigue. These stems are left a longer or shorter time, according to the irritability of the uterus and the sensitiveness of the patient. As a rule, she ought to remain in bed; if she is sensitive the instrument is only left for one or two hours. It is applied again the next day or the following one; the stem is changed for a larger one as soon as the canal is sufficiently dilated to allow of its entrance. If the patient tolerates the dilatation well, the first stem may be left

¹ *Archiv für Gynaekol.*, Bd. v, Heft. 2. Berlin.

² Out of twenty-seven women he cured twenty-four, and eleven of the twenty-four had children.

³ Jobert de Lamballe's "Report to the Academy of Medicine on Raynaud's Paper," *Bulletin de l'Académie*, 25 June, 1850.

longer, and when

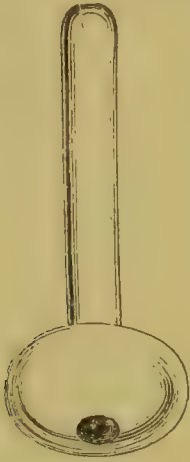


FIG. 232.
Simpson's intra-uterine stem.

it is withdrawn it may be replaced by a second, and that by a third, and so on. Simpson regularly employed this means of dilatation. Bennet¹ prefers bougies of wax or gutta percha to metallic sounds. He says that, when used cautiously, good results can be obtained without suffering, and in cases of slight constriction no further treatment is required. Wax bougies may be used every second day till the canal is sufficiently dilated; each bougie should be kept in place for some hours. When using Simpson's metallic sounds Bennet gives them a slight curve, with the concavity on the anterior surface, that they may be better adapted to the form of the cervico-uterine canal. Sims has wisely substituted the use of aluminum for other metals in the manufacture of these dilators. Aluminum is light, not easily decomposed, and more readily borne than any other metal. Nevertheless, instead of making use of bougies or catheters it is better to have recourse to dilating bodies, and to the most inoffensive of all,

viz. prepared sponge.

The naturally dilating bodies are especially useful when we cannot at once succeed in passing the internal orifice, either on account of its excessive narrowness, or on account of deviation, inflexion or torsion of the cervico-uterine canal. If they do not effect the complete dilatation of this canal including the internal orifice, they at least prepare the way for the penetration of instruments through this orifice. The treatment may be completed afterwards by incision or by the introduction of bougies or metallic stems into the cavity of the womb. The dilating body most commonly employed is prepared sponge, which should be applied according to the rules previously laid down (p. 149). Each sponge-tent should penetrate a little further than the preceding one, and as this application should be discontinued during menstruation, one or two months are often required to produce complete dilatation. Laminaria may be substituted for sponge-tents in dilating the external orifice, but it should never be used for the *os internum*, the swelling of the laminaria above the constriction rendering extraction of the stem impossible without lacerations, which may endanger the life of the patient. Prepared sponge alone ought to be employed in dilating the cervico-uterine orifice, and as I do not see any advantage that laminaria has over sponge, I use the latter exclusively for the dilatation of the vaginal orifice, as well as for the *os internum*. Unfortunately dilatation is often insufficient, especially for the *os externum*.

II. *Incision*.—When dilatation appears insufficient, incision of the cervix should be resorted to. This little operation, to which the imposing name of uterotomy or hysterotomy has been given, is not unaccompanied by accidents when performed *inopportunately* or *too deeply*.

¹ Op. cit., p. 338.

The incision may be single or multiple, superficial or deep; it may be limited to one, or extended to both orifices of the cervix. Some gynecologists proscribe division of the *os internum* in all circumstances.¹ As for myself, I have often remarked that obstruction of the internal orifice is caused by a curve or flexion of the uterus, a tumour on a level with the orifice, or simple hypertrophy of the upper part of the anterior cervical wall; but some constrictions are produced by congenital malformation, others by retraction of the circular or oblique fibres of this orifice, and others again by true contraction of the sort of sphincter which surrounds this orifice, the existence of which seems to me as clearly proved by my anatomical investigations as by the physiological phenomena I have observed. I acknowledge that incision of this orifice is much more dangerous than that of the external one; fortunately it is less frequently necessary. Nevertheless I think that dilatation by sponge-tents, and even by superficial incision, may be performed without danger, provided that suitable precautions be taken to arrest hæmorrhage if it threaten to be serious, and especially by avoiding operation at the menstrual period.

It is only accidentally and quite exceptionally that division of the external orifice can lead to any accidents. It is so often indicated that we must give up all hope of curing a large number of uterine maladies caused by a narrow vaginal orifice if its enlargement is to be proscribed.

Different methods of incision.—The utility of hysterotomy being admitted, all that remains is to procure the best instruments and discover the best way of performing the operation. I began by using the simplest instruments: a pair of long-handled scissors; a director with a long stem fitted on to a handle; a bistoury with a short blade like that of a tenotome, pointed or probe-pointed according to circumstances, with a long stem mounted on a handle which could be introduced into the uterus along the groove of the director.

I will describe the way in which I now perform the operation with the same instruments, with the addition of a pair of diverging tenaculum hook forceps; before doing so, however, I shall mention the instruments invented for the same purpose by other gynecologists, and which in some cases may be preferable by simplifying the operation and rendering it more rapid. The first of these instruments, Simpson's² hysterotome (Fig. 208, p. 227), is a kind of concealed bistoury, resembling in its mechanism the lithotome of Friar Côme, and which requires no description. Simpson, after incision, always applied the tincture of perchloride of iron or the glycerole of it to the cervix by means of a brush, and he plugged if necessary. The second, the *double hysterotome*, several varieties of which have been invented in France and England (Fig. 209, p. 227), allows of the incision of both sides of the cervix simultaneously. If Greenhalgh's instrument were less complicated and less costly there is no doubt it would be prefer-

¹ Discussion at the Obstetrical Society of London, June 7, 1865. *Lancet*, July 15th, 1865, and *Obstetrical Transactions*, 1866.

² *Op. cit.*, p. 254.

able to others, for by an ingenious contrivance the blades, in springing out, cut the tissues of the cervix from within outwards to an extent which increases in proportion as they advance from the cervico-uterine orifice to the utero-vaginal one; besides, the divergence of the two blunt blades, on a level with the vaginal orifice, separates the walls of the vagina from the sharp blades, and stretches the tissue of the cervix so as to facilitate incision. The analogous but simpler instrument made by Mathieu, although far from presenting the regularity and perfection of Greenhalgh's, is often useful. Many operators prefer scissors of various kinds to these concealed bistouries. Küchenmeister has invented a pair of scissors, the external blade of which is armed with a point which penetrates the tissue of the cervix and fixes the instrument at the desired height. Others have used scissors with toothed blades, to make the section a kind of tearing, so as to prevent hæmorrhage.

I have abandoned scissors as well as simple and double metrotomes, and have adopted a method by which the extent of the incision can be better controlled. Incision in some cases, however, being insufficient, recourse must be had to autoplasty. I shall, therefore, before describing these operations (incision and autoplasty) explain in which cases the one operation ought to be preferred to the other.

Indications for incision and autoplasty afforded by the condition of the vaginal orifice.—In cases of congenital narrowness there is generally a want of depth in the contraction of the *os externum* (Fig. 233). This may depend on two causes:—1. On the contraction of the sphincter (the mucous membrane is puckered, as is often the case with the orifice of the prepuce). This contraction will certainly yield to slow dilatation by sponge tents or to rapid dilatation with simple forceps, the blades being quickly opened after their introduction. 2. On the scantiness of the mucous membrane itself (in these cases it is not puckered). Slow dilatation may be tried; but incision is generally necessary: it succeeds because the two folds of mucous membrane (the vaginal and cervical) are close together and easily adhere to one another (this may be aided by the application of fine sutures). Lastly, the widening of the opening caused by the two lateral incisions persists almost completely, because the tissue of the uterine wall is thin and the cervical cavity which it limits is very large (Fig. 223).

In cases of accidental constriction, and in some even of congenital narrowness, the constriction is of some depth. In place of an orifice (*o*) there is a real canal (*o i*) (Fig. 234), varying in length and breadth. If the external mucous membrane of the vaginal portion of the cervix is sufficiently extensive, the same cannot be said of the limited internal mucous membrane, separated from the other by a more or less considerable thickness of tissue proper, and unable to come into contact with it, both on account of its insufficiency (there is want of material) and in consequence of the interposition of a foreign tissue in the regular conformation of the uterine orifice. If this canal be divided by a simple incision we enter an insignificantly small cervical

cavity. The internal mucous membrane can never be brought into contact, and still less made to adhere to the external one, and the

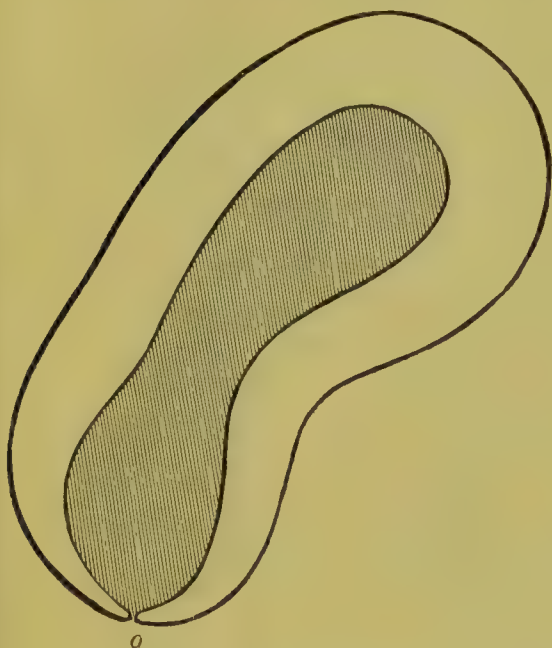


FIG. 233.—Congenital pin-point *os externum*. The orifice *o* has no depth. The uterine cavities which are behind are dilated by the accumulation of retained blood.



FIG. 234.—Congenital pin-point *os*, having the depth of a true canal *oi*; the fibro-muscular tissue of the uterus helps to make the orifice. The uterine cavities are also greatly dilated.

divided tissues will unite again, either directly by immediate reunion, or by cicatrisation and the gradual retraction of each commissure, from the angles of the bilateral incision to the primitive orifice. In such a case we must ensure the persistence of the commissures by an autoplasmic operation.

1. *Division of the orifice by bilateral incision.*—The method I have adopted for a number of years is the following:—In order to fix the uterus and at the same time to give to the tissues the tension requisite for clean and exact incisions, I introduce into the orifice my long diverging tenaculum hook forceps (see Fig. 235), one hook of which penetrates into the centre of the anterior lip, the other into the posterior. By opening them as wide as possible I fix the cervix and draw it a little towards the vulva whilst stretching each side right and left, so as to be able to perform the section slowly, regularly, and to the extent which seems to me necessary.¹ Two fine stitches may be applied afterwards, or a metallic suture to each side. As a rule this is not necessary. If I think congestion of the organ renders a little bleeding advisable I let a sufficient quantity of blood flow after the

¹ Olshausen (*Sammlung Klinischer Vortraege von Volkmann*, No. 67, Leipzig, 1874) has often recourse to what he calls bleeding dilatation; but in performing it, like me, he prefers using a simple probe-pointed bistoury.



FIG. 235.—Division of the *os externum* by bilateral incision.



FIG. 236.—Instrument for perforating the cervix and passing a vegetable or metallic thread through it; this is often indispensable on account of the resistance and hardness of the uterine tissue: *s*, sound penetrating into the cervix; *a*, needle pushed by a piston, *v*, through one side of the cervix and retained by the double hook *e*.

operation and then plug to prevent hæmorrhage. The patient removes the plugging by degrees, beginning the second or third day, taking baths or at least injections, which greatly facilitates the extraction of

the cotton wool. Great patience and care are required to prevent the occurrence of hæmorrhage or inflammation. Rest in bed should be enjoined for a few days, and sometimes the additional precautions of cataplasms, laxatives, enemata of laudanum, emollient vaginal injections, &c., should be resorted to. If necessary, the enlargement of the orifice may be completed by the application of sponge tents, but not before the following month.

2. *Bilateral division by means of elastic ligature.*—In order to ensure the permanence of this dilatation I have tried to perforate each side of the vaginal portion of the cervix at a certain distance from the orifice by means of a special instrument (Fig. 236) made for passing iron or silver wire, which I draw tightly after the following monthly period, tightening it gradually till the tissue has been completely divided. Latterly I have substituted elastic ligature for metallic

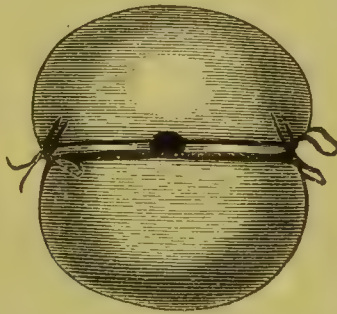


FIG. 237.—Cervix, through which an elastic ligature has been passed right and left from the natural to the artificial orifice.

wire, performing in fact an operation similar to that for anal fistula. Making on both sides of the natural orifice, at a distance of 1 or 2 centimetres, a new orifice, I pass through this opening an elastic thread, which comes out at the *os*. I stretch it tightly, and after having tied it firmly with a wax thread leave it. The bilateral section is effected slowly, and I have often the satisfaction of seeing the large opening that has been made remain permanent.

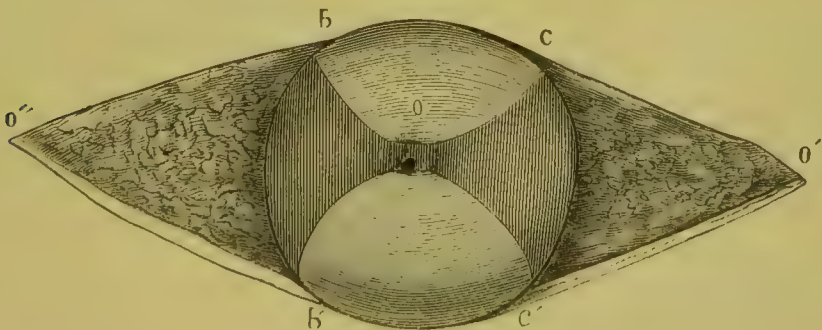


FIG. 238.—Autoplasty by the formation of artificial commissures. Dissection of two lateral pieces of triangular mucous membrane *cc' o'*, *bb' o''*; circular orifice *o*.

III. *Autoplasty*.¹—In cases where tissue is wanting, an artificial uterine orifice must be made.

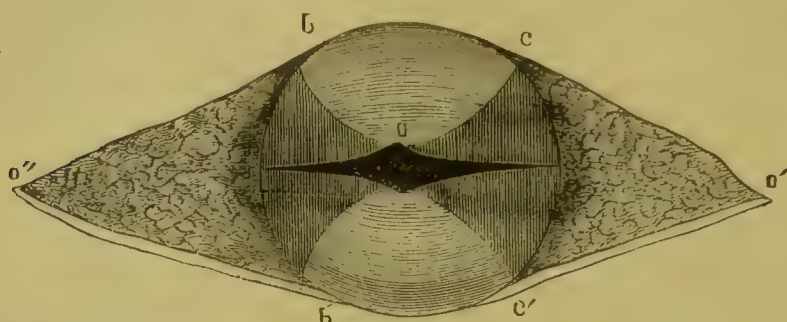


FIG. 239.—*Id.*, deep lateral incision extending from the narrow circular orifice *o* to the centre of the base of the triangular flaps *cc' o'*, *bb' o''*.

1. *Autoplasty by the formation of artificial commissures*.—If the orifice is narrow but the cervix not conical, I dissect lateral triangular or quadrangular flaps; when these are turned back (Fig. 238) I

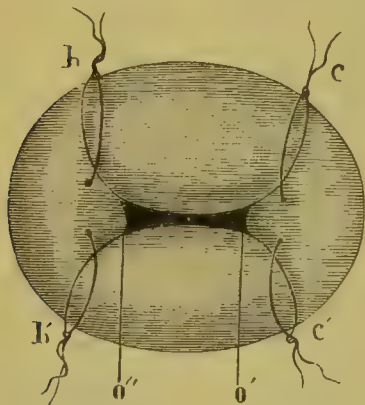


FIG. 240.—*Id.*

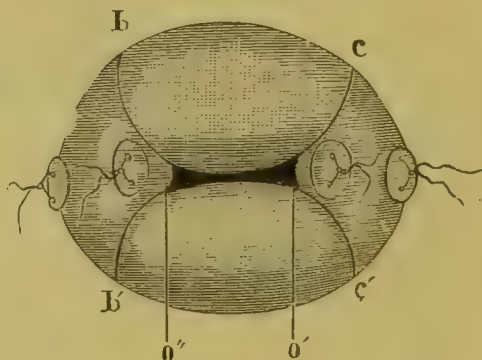


FIG. 241.—*Id.*

stretch the orifice well with my diverging tenaculum hook forceps, and divide it right and left (Fig. 239), and between these two lips which are held apart, I insinuate into each bleeding commissure thus made the bleeding surface of each lateral flap, keeping it in position by means of one or two simple or button sutures on each side (Figs. 240, 241). The threads are removed sooner or later as in vesicovaginal fistulæ.

The results of these autoplasties are most interesting (Fig. 242). I have seen some several years after operation in which the enlargement of the orifice with solid commissures had remained intact. In the patients who had undergone this operation dysmenorrhœa was cured, and in several pregnancy had occurred.

2. *Autoplasty by excision of wedge-shaped pieces of fibrous tissue and turning down the flaps of vaginal or external mucous membrane on*

¹ *Société de chirurgie*, 1872.—*Montpellier médical*, t. xxx, pp. 515, 522, an. 1873.

to the cervical or internal mucous membrane.—When the cervix is conical, and when, consequently, there is an excess of fibrous tissue as

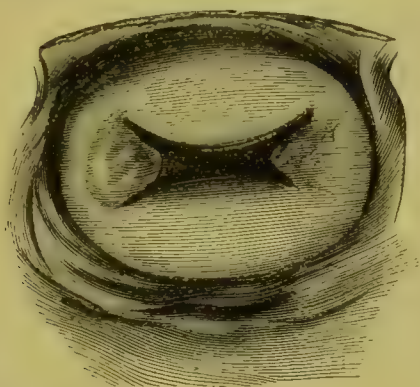


FIG. 242.—*Id.*, appearance of the orifice and its commissures after the removal of the sutures. Later on, the points of the dissected pieces are drawn into the commissures by the retraction of the cicatrix, and the orifice becomes more regular (figure drawn from nature).

well as an alteration in the shape of the organ, autoplasty is facilitated by the excision of two prismatic portions of this tissue before and behind, and by the suture to the cervical mucous membrane of quadrangular flaps of the vaginal mucous membrane, both before and behind. (See Figs. 243—246, and their explanations.)

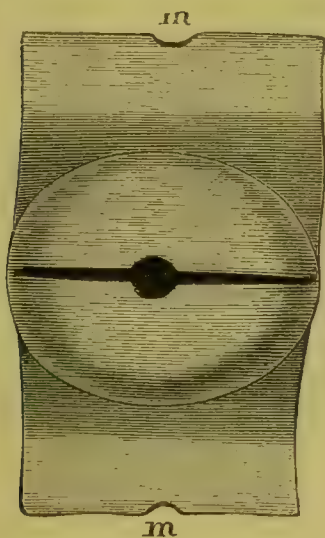


FIG. 243.

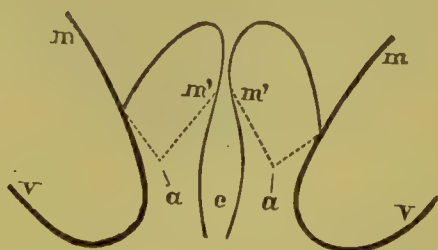


FIG. 244.

FIG. 243.—Quadrangular flaps of external mucous membrane of the cervix, meant to be turned down towards the internal mucous membrane after excision of a prismatic portion of the tissue proper.

FIG. 244.—Plan of operation: *vv*, vagina; *mm*, quadrangular vaginal flaps, designated by the same letters as in Fig. 243; *c*, cervical cavity; *aa*, dotted lines showing the limits of the excision of a prismatic portion of the tissue proper; *m' m'*, points of the cervical mucous membrane which are to be united to points *mm* of the vaginal mucous membrane.

3. *Autoplasty by excision of conical pieces of the vaginal portion of the cervix.*—The method by dissecting quadrangular flaps which I

have just described has been imitated by Simon, of Heidelberg, and described by Max Marckwald¹ under the new name of autoplasty by

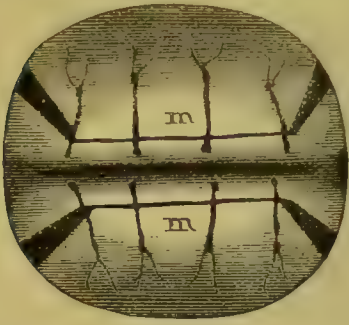


FIG. 245.—Four metallic sutures applied so as to keep the anterior and posterior dissected pieces of external mucous membrane in contact with the lining cervical membrane.

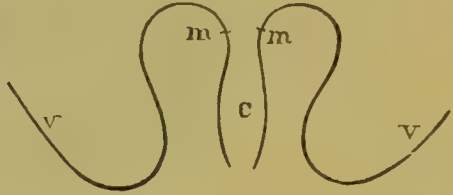


FIG. 246.—Plan of the result of the operation: *vv*, vagina; *c*, cervical cavity; *mm*, points of union of the dissected pieces of external membrane with the internal.

conical flaps. The former has performed it sixteen times, the latter four. This method of autoplasty is especially suitable to hypertrophied elongation of the cervix; the operation fulfils the double

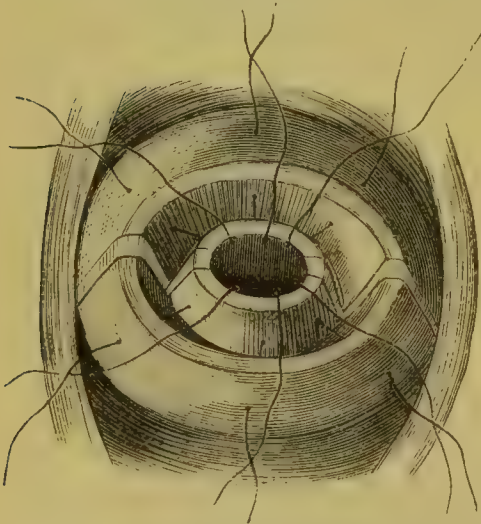


FIG. 247.—Max Marckwald's method of autoplasty by excision of conical pieces. Dissection of the mucous membrane. Excision of the pieces. Insertion of the sutures.



FIG. 248.—*Id.*, juxtaposition of the mucous membranes. The sutures drawn together.

indication of diminishing the volume of the cervix and making as large an orifice as possible, there being no fear of subsequent contraction, such as occurs after simple division of the cervix or after excision of the whole thickness of the cervix including the mucous membranes. This last method, however, being much more complicated than mine,

¹ *Archiv für Gynaecologie*, Bd. viii, S. 48, Berlin, 1875.

ought to be reserved for cases in which it is indispensable to excise a large portion of the cervix.

3. *Membranous Dysmenorrhœa.*

One of the most curious maladies, and somewhat similar to congestive dysmenorrhœa, is that described by Oldham in 1846 under the name of *pseudo-membranous dysmenorrhœa*, which Simpson studied at the same time under that of *pathological exfoliation of the uterine mucous membrane*, and which would be more correctly designated *membranous dysmenorrhœa*.¹ Although this disease is far from common, the singularity of this sort of mould of the uterine mucous membrane and its connection with the decidua have attracted the attention of many writers. Besides being one of the most interesting forms of dysmenorrhœa, it is one of which the very existence has been the subject of lively debate. Whilst some, with Bernutz,² considered its existence as established beyond question, Robin³ and others⁴ denied it, founding their arguments on the similarity of its morbid products with those expelled a month or six weeks after conception. This cannot be gainsaid; I myself have often recognised products of abortion in them.

The arguments in favour of membranous dysmenorrhœa are drawn on the one hand from the fact that the phenomenon may be repeated regularly every month till cure takes place, notwithstanding the discontinuance of marital intercourse, and on the other, that it has been observed in virgins.

I. Many cases have been published of persistent membranous dysmenorrhœa in married women, about which there can be no doubt. The first case of this kind which is carefully recorded is Morgagni's.⁵ It is a case of *membranous dysmenorrhœa in a multipara which gradually disappeared at the approach of the menopause. The entire exfoliated mucous membrane was expelled in the form of a bag.*

The hollow polypiform tumour due to dysmenorrhœa, described by

¹ Oldham, *London Med. Gazette*, 1846, vol. ii, p. 970.—Simpson, *Monthly Journal of Med. Science*, Sept., 1846, p. 161.

² Bernutz, *op. cit.*, p. 128.

³ *Gazette médicale de Paris*, 1857, p. 761.

⁴ Raciborski, quoted by Aran, p. 308. Since then, however, Raciborski has admitted the fact of the pathological exfoliation of the uterine mucous membrane (See *Traité de la menstruation*, p. 559. Paris, 1868).

⁵ Morgagni, *De sedibus et causis morborum*. Letter xlviii. "Of false pregnancy, abortion, and unhappy delivery," § 12. In 1814, Moreau also, in his inaugural thesis, describes the existence of this disease. He says, "Evrat has frequently observed that sterile women, some days after intercourse, passed portions of membrane analogous to the decidua, but the expulsion of these membranous fragments did not generally take place till the monthly period, and was invariably accompanied by tension, weight, and sometimes by dull hypogastric pain; may we not reasonably infer," he adds, "that the excitement produced by coitus is sometimes sufficient to determine the formation of the decidua without fecundation having taken place." Although our ideas on the nature of the decidua are quite different from those of Moreau, it is not the less true that these exfoliated and expelled mucous membranes are, after all, a species of decidua.

Boivin and Dugès,¹ may be connected with this same disease, as also the *exfoliated products* recognised as belonging to the uterine mucous membrane by Coste, Lebert, Follin, Dutard and Laboulbène, whose works have been judiciously revised by Sémelaigne.² One of the cases published by Tyler Smith,³ another published by Hégar,⁴ a third observed by Tilt,⁵ and others to which I shall afterwards refer are examples which seem indisputable. Troque,⁶ who has recently published an interesting monograph on membranous dysmenorrhœa, relates thirteen doubtful and fourteen authentic cases, without counting those of Lehnert and Eggel which I shall presently quote, that of Bourgarel⁷ and those which have come under my own observation during the last few years. There is no doubt that the product expelled at every menstruation was not always examined with all the detail of which a microscopic examination admits; the monthly repetition of the phenomenon, however, was established, and the existence of membranous dysmenorrhœa cannot be doubted when patients observe the most absolute abstinence from sexual intercourse as mine have done.⁸ In this way I have lately observed two new cases of undoubted monthly uterine exfoliation. The first relates to a patient who began to menstruate regularly and abundantly at sixteen; at twenty-one she had a natural labour followed by chronic metritis cured in a few months, at least to all appearance; at thirty tardy and insufficient menses, with phenomena of abortion. Since then membranous dysmenorrhœa, and the same whether sexual intercourse was discontinued or not. The expulsion became more painful after four years. Cauterisation of the uterine cavity with nitrate of silver; result almost *nil*.

The other case is that of a young woman presenting traces of rachitis and some scrofulous symptoms; married for two years; nullipara. Membranous dysmenorrhœa occurring at every menstruation and several times taken for abortion. Leeches applied to the vaginal portion of the cervix, division of the os. Retro-uterine inflammation, probably diathetic; formation and spontaneous opening of an abscess. Death from consumption.

I have noticed that a large proportion of the patients affected with membranous dysmenorrhœa have, like the above named, a bad constitution, are weak, lymphatic, scrofulous, or disposed to tubercle. The malady, although local, seems to depend upon a general condition which makes the probability of cure very uncertain. On the other hand, we sometimes find a tendency to the same disease in several

¹ *Maladies de l'utérus*, t. ii, p. 419.

² *De la Dysménorrhée membraneuse et de la membrane dysménorrhéale*, Thèse de Paris, No. 232, année 1851.

³ *The Lancet*, 18 June, 1855, p. 608.

⁴ *Monatsschrift für Geburtsk*, 1863, Bd. xxii, S. 176.

⁵ *Arch. of Med.*, 1861, vol. iii, p. 96.—On uterine and ovarian inflammation (exfoliative internal metritis), p. 267. London, 1862.

⁶ *Étude critique sur la dysménorrhée membraneuse*. Paris, 1869.

⁷ *Union médicale de la Provence*, 1864.

⁸ Courty, *Nouvelles observations de dysménorrhée membraneuse*, in *Montpellier médical*, t. xxiii, p. 215, 1869.

women of the same family, a fact to be taken into account with regard to etiology. Brouardel has communicated to Siredey (*Nouv. dict. de méd. et de chirurgie pratiques*, art. "Dysménorrhée") Duplan's case of a girl who had five sisters, all of whom suffered from membranous dysmenorrhœa ever since their first menstruation. One of Siredey's patients has a sister who, like herself, has suffered from membranous dysmenorrhœa.

II. *The monthly exfoliation of the mucous membrane* has not been observed as frequently *in virgins* as in married women, for the simple reason that membranous dysmenorrhœa, like all other uterine diseases, is rarer in the former than in the latter, and that the physician is taken less into the confidence of the former with regard to what occurs in the course of a menstrual malady, were it for no other reason than the ignorance and want of observation of the patient. No one, however, engaged in scientific research, or who makes minute inquiries into all doubtful cases of menstrual disorders occurring in a large gynæcological practice, can fail to meet with authentic cases of the malady in question in virgins, and consequently to acquire a new scientific proof of its existence independently of conception and abortion. In this way I have collected four cases of *membranous dysmenorrhœa in virgins*, which are not without interest. The first was observed by Dubois of Neufchatel,¹ and is a case of expulsion of membrane from the uterus at the monthly period in a girl of eighteen. The second case is that of a girl of sixteen expelling dysmenorrhœic membrane.² The third case is one of membranous dysmenorrhœa existing throughout the virginity of the patient as well as after marriage. The case is related by Eggel,³ who read it before the Gynæcological Society of Berlin, when several members admitted the existence of this disease in virgins. Lastly, I have myself seen a case of membranous dysmenorrhœa in a virgin, the cause of which was obscure, and which was only ameliorated by partial treatment.

The latter series of cases proves that the exfoliation of the uterine mucous membrane may take place independently of any abortion. The membrane which is expelled periodically presents, it will be seen, the special characters of the uterine mucous membrane. It often has the triangular form of the cavity of the body of the uterus (Fig. 249). Sometimes it is divided into two triangular portions; sometimes it is expelled in small fragments (Fig. 250). When it is passed entire it

¹ Dubois of Neufchâtel, *Gazette méd. de Paris*, 1847, p. 729 and 909.

² *Monatsschrift für Geburtskunde*, 1868, Bd. xxxi, S. 5.

³ Eggel, *Monatsschrift für Geburtskunde*, 1869, Bd. xxxiii, S. 11.—Solowief Alexandre (*Decidua menstrualis*, *Archiv. für Gynaekologie*, Bd. ii, S. 66. Berlin, 1871) describes the case of a girl of twenty-one whose hymen was intact and who had frequently passed fragments of exfoliated mucous membrane after dysmenorrhœa. Finkel relates another case of expulsion of the uterine mucous membrane in a virgin in whom the hymen was intact, and two others in women who had abstained from sexual intercourse for two or three months (*Archiv für pathol. Anat. und Physiol.*, Bd. lxiii, 1875). Beigel admits also that it is not rare to meet with it in virgins (*Archiv für Gynaekologie*, Band ix, Heft 1).

generally presents several orifices; the lower one, irregular, with the border more or less torn, corresponds with the *os internum*; the two



FIG. 249.—Uterine mucous membrane expelled entire, opened, showing the smooth internal cavity perforated with glandular orifices, and the external surface covered with villousities, the extremities of blind tubular glands. Preparation in St. Thomas's Museum, natural size (after Barnes).

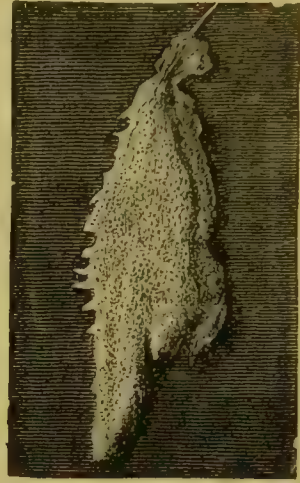


FIG. 250.—Portion of the uterine mucous membrane expelled in dysmenorrhœa (after Oldham). It is the first figure ever given of the exfoliated mucous membrane. There are two others in Tilt's work (*On Uterine and Ovarian Inflammation*, p. 266 et seq. London, 1862), and another in Henning's *Memoir* (*Monatsschrift für Geburtsk.*, 1864). The monthly expulsion of the mucous membrane generally takes place in this way, in fragments.

others, which are very small and situated at the two upper angles of the expelled product, correspond with the *ostia uterina*. The colour is usually deep red; the external surface is villous, sometimes infiltrated with small clots of blood, whilst the internal surface is perforated with holes corresponding with the glandular orifices, and is smooth to the touch. Vannoni has observed that when the sac is inverted during its expulsion from the uterus the villous surface may be found within.

As a rule the external surface is very slightly villous; the villousities may, however, acquire a considerable size, as Henning, of Leipsig, has seen.¹ In this case, described under the name of *villous dysmenorrhœa*, it is difficult to admit that the villousities belong to a chorion, and that the expelled membrane is a product of abortion, as the phenomenon was repeated six times, and each time at an interval of exactly a month. Although this case is very different from the preceding ones, it seems to be an additional example of exfoliative dysmenorrhœa. Examined by the microscope, the product presented the structure of the uterine mucous membrane, only differing from the decidua by the slighter development of its capillary vessels, by the small amount of

¹ *Monatsschrift für Geburtsk.*, 1864, Bd. xxiv, S. 130.

its special cells and of its epithelium, which is of the prismatic instead of the pavement variety, like that of the decidua at the second month. This product contained a great quantity of *débris* of utricular or blind glands.

The causes of this pathological exfoliation are very obscure. Oldham explains nothing in attributing it to *ovarian influence*; this influence has neither been proved nor defined. Tilt,¹ in a communication to the London Medical Society, connects it with an inflammatory condition; in a later publication, however, he justly remarks that the latter is not only the cause but the consequence of the passage of the sac or of this kind of delivery which occurs monthly. Scanzoni says he has only seen one case in which there was not an appreciable alteration of the womb; in all others, the uterine walls were the seat of a chronic engorgement, or there were flexions, fibroids or polypi. As for myself, I do not know of a single case in which the disease was not preceded by more or less disturbance of the economy or of the uterus, shown by painful and irregular menstruation. It seems to me to be the result of a sanguineous congestion, a kind of apoplexy of the mucous membrane;² in support of this opinion we may refer to the small clots found infiltrated in the expelled product, adding that, like apoplexy, it may be produced

¹ The *Lancet*, 1853.—Several authors, commencing with Andral (*Anat. pathol.*, t. ii, p. 681. Paris, 1829), and including Huchard and Labadie-Lagrave, attribute the exfoliation of the uterine mucous membrane to inflammation or irritation. They call it *menstrual metritis* (*Archiv. gén. de méd.*, 1870); Kaschewarowa (*Ueber die Endometritis decidualis chronica*, in *Monatssch. für Geburtsh.*, Bd. xxxii, Heft 5). In some cases the inflammatory nature of the disease cannot be denied, as in Labadie-Lagrave's cases (*vaginitis, endometritis, membranous dysmenorrhœa for nineteen years, antiphlogistic treatment and cure*) and in Huchard's (*membranous dysmenorrhœa connected with menstrual metritis for thirty-two years, contrast between the amelioration of the symptoms in the intercalary period and their aggravation at each monthly period, improvement from the use of emollients*). Huchard and Labadie-Lagrave, *Contributions à l'étude de la dysménorrhée membraneuse* (*Arch. gén. de méd. de Paris*, 1870-72). We do not, however, consider that this form of dysmenorrhœa is necessarily the consequence of inflammation, nor that it should be designated *exfoliative endometritis* as Beigel suggests (*Arch. für Gynaekol.*, Bd. ix, Heft 1. Berlin, 1876). Gaillard Thomas is also of our opinion (*op. cit.*, p. 595).—Besides, we know that membranes analogous to those referred to are found in the uterus at other times than the monthly period, and there is no reason why inflammation should have more share in the formation of the one than of the other (*Chronit Slawjansky, Endometritis decidualis hemorrhagica bei Cholera-kranken*, in *Archiv für Gynaecol.*, Bd. iv, S. 285. Berlin, 1872).—Other authors, *e. g.* Mandl (*Zur Pathologie und Therapie der Dysmenorrhœa membranacea*, *Wiener medical Presse*, 1869, No. 1 to 16. *Monatssch. für Geburtsh.*, Bd. xxxiv, Heft 5. Berlin, 1869), regard it as special (*morbis sui generis*), whilst following Robin and Haussmann some consider it early abortion (*avortement ovulaire*); but if so, it should be possible to recognise it by its form, structure, &c.

² For which reason Hegar and Eigenbrodt have given it the name of *apoplectic dysmenorrhœa*. Besides, the thrombic accumulations, the real sub-mucous apoplectic centres prove the existence of sanguineous effusions, which associated with uterine contractions would be the chief secondary causes of the exfoliation of the uterine mucous membrane. The membrane is separated from the subjacent surface by a fibrinous layer containing free round cells (Beigel) or by real apoplectic centres, the results of sub-epithelial or sub-mucous sanguineous extravasations (Huchard and Labadie-Lagrave).

in the absence of any organic alteration of the womb; the mucous membrane must also have a special tendency to exfoliation. As to dysmenorrhœa, strictly so called, although it usually accompanies exfoliation, it may be wanting without the malady losing its distinctive character, which is the expulsion of the mucous membrane. *Exfoliation and expulsion* of the mucous membrane are the anatomo-pathological elements of the disease in question. Mayer,¹ of Berlin, relates the case of a married lady, twenty-seven years of age, who was sterile, and who suffered from the monthly exfoliation of a thick and consistent membrane without dysmenorrhœa. The dysmenorrhœic pain depends solely on the relation between the size of the expelled membrane and the orifice through which it has to pass.

A little reflection on the special nature of uterine diseases will convince us that there is nothing so very extraordinary in membranous dysmenorrhœa. The same properties characterise the organs and tissues in the evolution of their pathological processes as in the accomplishment of their physiological processes. Many pathological phenomena are only an impairment or an exaggeration of physiological ones. With various degrees of reaction to pathogenic causes, the tissues respond to the action of these causes in the same way that they respond to the causes which normally elicit the display of their activity. Now the uterine mucous membrane becomes hypertrophied and is exfoliated by the physiological act of parturition, and by the pathological act of abortion (intermediate between the exfoliation of parturition and that of dysmenorrhœa). Is it surprising that, under the influence of a uterine disease which places the tissues in a condition analogous to that of the beginning of pregnancy and abortion, this mucous membrane should be exfoliated in the same way, although it does not contain any product of conception? In this case an abnormal process takes place analogous to what occurs normally under the influence of conception. This process commences at the ripening of every ovum in the ovary, at the dehiscence of every Graafian vesicle, at every menstrual period. The mucous membrane swells and commences to hypertrophy, as if in preparation for a possible conception. It is this periodical hypertrophy of the mucous membrane which has been described by Aveling under the name of *nidation*, and in place of hypertrophy Aveling,² Williams,³ and others admit a monthly development, a new formation after every menstruation. This new uterine mucous membrane formed during each intercalary period, is supposed to be entirely detached and expelled every month, owing to fatty degeneration and disintegration with subjacent hæmorrhage, and to disappear with the menstrual discharge in fragments which escape observation. Therefore Aveling calls it the *nidal decidua* to distinguish it from the decidua of gestation. Membranous dysmenorrhœa is, according to this theory, only an exaggeration of this phenomenon.

¹ *Beiträge zur Geburtskund. und Gynaekol.*, Bd. iv, Heft 1, S. 33. Berlin, 1875.

² *London Obstetrical Journal*, July, 1874.

³ *Id.*, February and March, 1875.

The formation of a new mucous membrane every month is not proved, and I think the exfoliation of this membrane is only an exceptional fact. The only thing really proved is the enormous hypertrophy of the uterine mucous membrane at every menstrual period. An excess of this hypertrophy is sufficient to constitute an obstacle to the discharge of the menstrual blood and a local cause of the detachment of the mucous membrane by subjacent sanguineous effusion. It is not even necessary to suggest this hypothesis. In fact when fecundation does not take place, the uterine mucous membrane resumes its normal condition, and all congestion and erection ceases in the utero-ovarian system. If, however, this regressive atrophy (the analogue in miniature of the retrograde evolution following delivery) is absent owing to a local malady or a general condition reacting on the uterus, there will be a great risk of exfoliation of the mucous membrane taking place. Now, I have observed that the majority of women affected with membranous dysmenorrhœa are thin, delicate, chlorotic, rachitic or scrofulous.

All writers have made the same remark; and some physicians consider this malady merely as the localisation of a variable diathetic affection, the nature of which is not yet clear, but the existence of which is probable, since it is sometimes seen in several women of the same family (p. 321). If some refuse to see in membranous dysmenorrhœa the localisation of a general affection, they cannot deny that the reaction of the disease is sometimes propagated to more or less distant organs; for instance, a propagation of this kind may produce real exfoliative enteritis;¹ it is perhaps a propagation of the same kind which causes buccal ichthyosis, and which has led Gautier, of Geneva,² to suppose that the disease in question is only uterine ichthyosis, detached in patches. To sum up, there is a connection between membranous dysmenorrhœa and morbid conditions of other organs till now imperfectly determined, but which deserves attention.

Diagnosis.—The symptoms of this affection are those of congestive dysmenorrhœa, frequently aggravated by complications. When uncomplicated, the disorders only exist at the monthly period. Scanzoni³ observed in one of his patients an acute pain in the renal and umbilical regions, occurring eight or even fifteen days before the menses appeared; this, however, is exceptional, usually pain appears only the evening before menstruation. It seems to cease all at once with the appearance of the discharge, but recommences shortly afterwards with renewed intensity. It is at first congestive or inflammatory, with a feeling of fulness in the pelvis, heat, tension at the hypogastrium, in the loins, and in all the pelvic cavity. It afterwards becomes expulsive and intermittent, assuming the character of labour pains, of real uterine contractions which may be transformed into

¹ Huchard and Labadie-Lagrave (*Archiv. gén. de médecine*, 1870).

² *Congrès international des sciences médicales*, 5^e session, p. 460. Geneva, 1878.

³ *Op. cit.*, p. 335.

cramp, which requires to be calmed in order to regulate contraction and facilitate the expulsion of the caducous membrane. At last, after repeated alternations of exacerbation and comparative relief, lasting from four to six hours, a more or less extensive membrane is expelled either at once or at different times in fragments, and from this moment there is a diminution of the violence of the pains. After expulsion there is a pale red discharge soon replaced by one altogether mucous in character. At the next monthly period the same scene may be repeated with more or less violence; only the membrane may be less extensive, and may no longer represent the mould of the uterine cavity exactly. This indicates an improvement which may either be due to treatment or to natural causes, giving us reason to hope that cure is not far off.

It is not uncommon for exfoliation and expulsion of the uterine mucous membrane to coincide with other serious pathological states. These concomitant phenomena are: general deterioration of health, anæmia, chlorosis, scrofula, tuberculosis, leucorrhœa, chronic endometritis, repeated formation of false membranes, of coagulation of mucus, of epithelial desquamation of other organs, such as the tubuli uriniferi in catarrhal nephritis, the trunks of the bronchi and the trachea, the larynx, the pharynx as the seat of pultaceous angina, &c. Glairy enteritis (not including dysentery, diphtheria and thrush) and exfoliative enteritis (Heyfelder, Siredey, Huchard, &c.) have been observed simultaneously with exfoliative metritis, as have also analogous alterations of the mucous membrane of the bladder (Luschka, *Virchow's Archiv*; Deneffe, *Bulletin de la Soc. anat. de Paris*, 1862; Spencer Wells, *Obstetric. Transact.* vol. iv) and of the vaginal mucous membrane (Tyler Smith, Farre, Vannoni, Tilt, Delore).

Differential diagnosis.—Membranous dysmenorrhœa must be distinguished from abortion. There are differences, as Raciborski¹ says, which enable us to distinguish them; the dysmenorrhœic expulsive pains precede the monthly hæmorrhage, whilst hæmorrhage precedes the pains of abortion; in the former the cervix is closed, in the latter it is open; the dysmenorrhœic membrane is generally in fragments, that of abortion more or less entire; if entire, the former is rather triangular (moulded on the uterine cavity), the latter ovoid;² the former is often an incomplete decidua, in which a great number of elements, glandular and vascular especially, are wanting, the latter, like every gravid decidua, is thicker, richer in vascular arborisations, and even showing a trace of the spot where the ovum³ was lodged; the former is only expelled at the menstrual period which is not delayed,⁴ the latter at other times, independently of men-
 .

¹ *Traité de la menstruation*, p. 559. Paris, 1868.

² See the form of this decidua of abortion, compared with that of the dysmenorrhœic membrane (fig. 249) in a drawing added to my paper entitled, *Mécanisme habituel de l'avortement dans les premiers mois de la grossesse*, &c., *Montpellier médical*, t. v, pp. 215, 428, &c., 1860.

³ Gillet de Grandmont, *De la muqueuse utérine et de son évolution pendant la menstruation et la grossesse*. Inaugural thesis. Paris, 1864.

⁴ This expulsion occurring always at the menstrual period may be repeated

ation, usually after some delay, that is to say, its expulsion is preceded by a gestatory amenorrhœa (however short); the former has a cylindrical, the latter a pavement epithelium; the former is often accompanied by symptoms of metritis and inflammatory exudations, the latter by neither. It is important to notice these differences in forming a prognosis and to confirm them by enjoining strict discontinuance of marital intercourse; for if it is a question of membranous dysmenorrhœa an unfavorable prognosis as to a future pregnancy will be given; if it is a question of abortion the prognosis will be relatively favorable to another pregnancy, at least proportionately to the gravity of the causes which have produced the abortion.

The expulsion of the exfoliated mucous membrane has often been confounded with that of other products of the womb. Apart from clots of blood, we know that a certain number of products, apparently membranous, may come from the uterus. But an attentive, minute histological examination, aided by the microscope, will not fail to detect profound differences under apparent analogies. The apparently similar membranous products which may be expelled from the uterus may be classed under three heads: 1, *coagulations of mucus* presenting the characters of inflammatory exudations, moulded on the uterine cavity, and preserving sufficient consistency to be expelled under the form of entire pseudo-membranes, being sometimes formed of several homogeneous layers or plastic concretions which increase their thickness and tenacity, and may give rise to an *exudative dysmenorrhœa*;¹ the desquamation there effected is sometimes only the first stage of the malady followed by exfoliation which will take place later on; 2, *false membranes* strictly so-called, analogous to those which are formed on other mucous membranes from slight epidermic exfoliations lined with coagulations of mucus, analogous to those of thrush and to more serious exfoliations lined with fibrinous products, separating from the dermis of the mucous membrane only by ulceration or laceration, which are of the same nature as croupous membranes and equally serious, hence the name of *diphtheritic metritis*. We may therefore give the name of *pseudo-membranous or diphtheritic dysmenorrhœa*² to this disease; 3, lastly, the *uterine mucous membrane* itself, which is separated from the underlying tissue as at delivery or at miscarriage or at a simple abortion, and which is expelled sometimes entire in the form of a sac, with external or internal villousities according as it

consecutively for eight years (Case of Veit, Christôt), ten years (Huchard), fifteen years (Mandl), in fact indefinitely.

¹ No one doubts the reality and nature of these *exudations* and of these *coagulations of mucus*.

² This name has been adopted by Huchard and Labadie-Lagrave (*Contribution à l'étude de la dysménorrhée membraneuse*, Paris, 1873, and *Arch. de méd.*, loc. cit.). Boggs (*Notes et réflexions chirurgicales sur les phlegmasies de la matrice*. Thèses de Paris, 1866); Hervieux (*Traité clinique et pratique des maladies puerpérales*, t. i, p. 240. Paris, 1870); Krieger (*Die menstruation, eine gynækologische Studie*, S. 196. Berlin, 1869); Scanzoni (op. cit., p. 335); Churchill (op. cit., p. 218).

passes directly or inverted, sometimes in more or less considerable fragments, sometimes in small shreds, but always with its characteristic elements, its glands, epithelium, &c. It is for the disease characterised by the exfoliation and expulsion of the uterine mucous membrane itself that we must reserve the name of *membranous or exfoliative dysmenorrhœa*.¹

Lastly, besides products of the womb, there are also membranous *débris* from the vagina (epithelial vaginitis of Tyler Smith and Farre, *Archives of Med.* 1856-59, vol. i, p. 71), sometimes even real moulds of the vagina, expelled by patients, as described by A. Farre (*Beale's Archives*) and Barnes (op. cit., p. 217), which must not be confounded with membranes produced by dysmenorrhœic uterine exfoliation, and which differ in every respect. Besides the difference in the macroscopic and microscopic characters of the expelled pro-



FIG. 251.—Exfoliated vaginal mucous membrane, forming a mould of the vagina, in St. Thomas's Museum (Barnes).

ducts, it is sufficient to add, to complete the diagnosis, that the vaginal products are always expelled without *dysmenorrhœic pains*.

Treatment.—Although this disease does not involve risk of life, it is serious, not only because of the monthly suffering, but also on account of the reproductive functions. It is all the more important to treat it, as Beigel justly remarks, because it is a cause of sterility and abortion. I have collected several cases in which abortion was

¹ Saviotti (*Contribution à l'étude de la caduque menstruelle*. Turin, 1869); Solowief (*Decidua menstrualis*, *Archiv f. Gynæc.*, Bd. ii, S. 68, 1870); Hegar and Mayer (*Beiträge zur Pathologie des Eies*, *Virchow's Archiv*, Bd. ii, S. 161. 1871).

undoubtedly connected with this morbid state, and a number of others, in which this disease was so evidently a cause of sterility that in several conception followed the cure of the malady. The patient whose history is related by Henning is a striking example of this: after having expelled these membranous products six times during the first six months of her marriage, she was cured so completely that three months afterwards she became pregnant and had a good delivery.

I may here quote two other equally authentic cases of cure of membranous dysmenorrhœa. I could mention several others, but do not wish to put before the reader any cases as to which there could be the slightest doubt.

The first case is an example of membranous dysmenorrhœa in a virgin with aggravation of symptoms after marriage.—Sterility.—Amelioration.—Widowhood, cure.—Second marriage.—Two pregnancies followed by delivery at term. It is probable that the consolidation of the cure by widowhood was the indirect cause of the cessation of sterility at the commencement of the second marriage.

The second case is an example of membranous dysmenorrhœa occurring after marriage and an abortion.—Slight retroflexion, leucorrhœa, menorrhagia.—Long duration of the disease.—Cure after a long continued general treatment, tonic and anti-diathetic, and slight cauterisations followed by tonic applications to the uterine mucous membrane. It is evident that in these two cases the disease was of an inflammatory nature. That does not imply that an analogous treatment would not succeed even when symptoms of metritis were less accentuated. We must, however, remember that, membranous dysmenorrhœa being frequently connected with a serious disturbance of the constitution, we must try to modify the constitution by general treatment, more frequently tonic, alterative and anti-diathetic than anti-phlogistic. The local treatment is less difficult to institute.

The treatment varies, not only according to the patients and their constitution, but also according to the stage at which the physician is consulted and the complications which may co-exist. Referring the reader for these latter to the chapters devoted to them, I will confine myself now to mentioning what should be done in the simplest cases, those in which the inflammatory element is the only complication to be feared. Whatever the case may be, the primary indication at the time of suffering is to alleviate and diminish the pain; preparations of opium given internally should be associated with belladonna or chloroform liniments applied to the abdomen. In the intercalary period, however, it will be well to apply some leeches to the cervix and to cauterise the uterine cavity with nitrate of silver. Although these means have often succeeded, especially in the hands of Tilt, they have also failed; Scanzoni has cauterised for whole months without obtaining the slightest alleviation. These failures chiefly depend on the nature of the complications: when they cannot be combated successfully the dysmenorrhœa resists all therapeutic efforts.

To prevent the formation of membranes, especially in exudative or pseudo-membranous and even in diphtheritic dysmenorrhœa, we may resort to the injection of a saturated solution of chlorate of potash or to crayons of chlorate of potash introduced every two days into the uterine cavity; they are sometimes completely dissolved, at other times reduced to small fragments in twelve hours. Injections of a strongly alkaline solution of bicarbonate of soda may act favorably on the mucous membrane. Solowief¹ has proposed electricity for the same purpose.

When the dysmenorrhœic symptoms seem to be produced by want of proportion between the uterine orifice and the membrane which has to be expelled we may follow the example of Tyler Smith,² who relieved a patient by introducing a metal stem into the cervix in order to dilate mechanically. This question requires more investigation. It seems to me, that in the majority of cases, the local indications are limited as follows:—1, by dilatation or incision to render the uterine orifice easy to pass; sufficient attention is not paid to this matter: prepared sponge is in such cases an excellent means of dilatation and of rendering the tissues supple; 2, to modify the internal surface of the organ by catheterics or slight caustics, such as fine injections of saturated solution of chlorate of potash (the action of which on the mucous membranes is so efficacious), or of nitrate of silver, tannin, perchloride of iron, iodine, or of very weak solutions of arsenic or mercury, or even chloride of zinc greatly diluted. It is only by modifying the tissue of the mucous membrane and its vitality more or less energetically that we can hope to arrest this continued tendency to exfoliation.

The treatment which I have found most successful consists in dilating the cervix with sponge-tents, the dilating and resolvent action of which is assisted by the use of belladonna ointment, the application of mercurial ointment to the hypogastrium, by small rectal injections of iodide of potassium, by emollient and alkaline baths, and by a tonic and antiphlogistic general treatment, in which hydropathy should not be forgotten; the surface of the uterine mucous membrane should be modified simultaneously by the direct application of chlorate of potassium, nitrate of silver, tannin, iodine, perchloride of iron, ointment of red precipitate of mercury, &c., according to the predominance of the local indication. During the whole time of treatment the general health should be particularly attended to, tonics, alteratives, a good regimen, exercise, hydropathy, mineral waters being prescribed as may be specially indicated; in this way we must try favorably to modify the constitution, which in its turn will exercise a beneficial influence on the uterus.

UTERINE NEURALGIA

Uterine neuralgia or *hysteralgia* is like the neuralgia of all other organs, a serious disorder of sensibility, characterised by acute pain,

¹ *Archiv f. Gynaecolog.*, Bd. viii, S. 3. Berlin, 1875.

² *The Lancet*, 16 June, 1875.

independent of any other morbid state such as congestion, inflammation, &c., which, however, may co-exist with it. Whilst believing that neuralgia is usually the localisation of diathetic affections, such as catarrh, rheumatism, arthritis, gout, herpetism, &c., I admit that it may be developed temporarily in an organ as a simple morbid act, resulting from the existence of a local or general pathological condition. Hysteralgia is what the ancients called a disease without matter, a transition point between simple local uterine diseases without neoplasm, and those maladies depending on a general affection, characterised by an organic alteration.

Diagnosis.—Nonat¹ distinguishes *primitive* hysteralgia, occurring suddenly, in which the nervous pain commences in the uterus and is propagated into various regions of the body, from *secondary* hysteralgia manifested subsequently to a neuralgia developed on some other point of the organism. He also distinguishes *idiopathic* from *symptomatic* hysteralgia. The latter, which may depend on metritis, peri-uterine phlegmon, &c., does not seem to me to be as important as the former; for it is accompanied by symptoms foreign to the neuralgia itself, and yields to the treatment of the dominating malady. As for idiopathic neuralgia, although it is a disease without matter, it is not only nervous and essential, but also diathetic like sciatica and all other neuralgias.

Uterine neuralgia usually coexists with lumbo-abdominal, lumbo-sacral or intercostal neuralgia. Valleix² considers uterine neuralgia as nothing more than the mode in which these morbid states are manifested, *i.e.* as a lumbo-abdominal neuralgia, of which the most painful spot is situated in the uterus. The majority of practitioners look upon uterine neuralgia as primitive, and the pain produced in the various nerves of the lumbar plexus as only sympathetic or symptomatic irradiations. Struck by the coincidence of uterine neuralgia with cervico-brachial, facial, supra-orbital and especially with intercostal neuralgia, Bassereau³ admits that the painful condition of the uterus reacts through the branches of the great sympathetic on the intercostal nerves determining neuralgia. There may assuredly be irradiation, or reflex action, or coexistence of two neuralgias under the influence of a common morbid affection.

It is probably this malady which Gooch⁴ designated by the name of *irritable uterus*. Although several writers have attributed his description to metritis or to the painful contractions which any kind of disorder may excite in the organ, I think that the name of permanent dysmenorrhœa, which he also gave it, leaves no doubt as to the nature of the pain and its continuity during the intercalary periods as

¹ Op. cit., p. 393.

² *Traité des névralgies et Bullet. gén. de thér.*, jan., 1847.—*Guide du médecin praticien*, t. v, p. 195. Paris, 1861.

³ *Essai sur la névralgie intercostale considérée comme symptomatique de quelques affections viscérales*. Thèses de Paris, 1840.

⁴ *On the more important diseases peculiar to women*, p. 332. London, 1831.—See also Genest, *Gazette médicale*, 1830, pp. 323, 385; Scott, *Gazette médicale*, 1834, p. 809; Balling, *Neue Zeit. f. Geburtsk.*, Bd. i, S. 21, 2nd case.

well as during menstruation. It is this character of spontaneous and continued pain, hardly interrupted for an hour, often seated in the lower part of the uterus, quite different from uterine colics or expulsive pain, sometimes causing intolerable suffering at the slightest movement or touch, radiating into the lumbar plexus, which allows of our diagnosing hysteralgia and distinguishing it from other painful states of the womb. This is all the more striking, as usually it is only the isthmus and the mucous membrane of the body of the uterus that are sensitive. The sensibility of other parts is very dull; the cervix apparently having none.

The pain varies in nature from the sensation of itching, irritation, intolerable heat to that of intense shooting pain in the uterus and in the course of the nerves just referred to. It is often confined to one side of the pelvis. It may be aggravated by heat as well as by movement. It prevents sleep or interrupts it suddenly by a fit of pain. It is greatly increased by the cervix being touched, and I have seen it accompanied by contraction of the vulvo-vaginal sphincter.

It is generally worse a few days before the menses, without, however, interfering with the regularity of menstruation, it does not necessarily hinder the free exit of blood, and consequently, while liable to be confounded with nervous dysmenorrhœa on account of the development of pain and the dysmenorrhœic symptoms which may complicate it, it may be distinguished by the freedom with which the catamenial discharge takes place, and by the absence of the expulsive pains characteristic of uterine colic.

The differential diagnosis is certainly difficult when there are complications. For example, nervous, congestive or even mechanical dysmenorrhœa, congestion, inflammation, hypertrophy of the uterus, peri-uterine inflammations, prolapse of the uterus and vagina, with the very painful draggings thereby caused, organic lesions such as cancer, hysteria and the local phenomena accompanying it, are all morbid states which may be mistaken for neuralgia owing to the pain which they cause. Therefore great care should be taken to discover if any of these lesions exist; for hysteralgia is so rare that, however violent and persistent the pain may be, we should always presume that it is symptomatic of some one of these morbid states rather than of hysteralgia. Graily Hewitt regards it as being only a symptom of retroflexion; in a supposed case of uterine neuralgia related by Allison,¹ the autopsy disclosed a serious peri-uterine inflammatory lesion. Even the effects of uterine neuralgia help to conceal its true nature; leucorrhœa in fact may accompany it as a symptom, just as salivation and tears accompany neuralgia of the trifacial, and whilst in the majority of cases we are liable to be misled in attributing to a supposed hysteralgia the pains produced by another disease, so on the other hand we may overlook hysteralgia when it really exists, attributing the suffering to leucorrhœa which is only one of its symptoms.

¹ Painful affection of the cervix, excision, cure; death the following year. The *post-mortem* examination showed adhesions uniting the uterus to the bladder and rectum (*Gazette méd. de Paris*, 1843, p. 301).

The characteristics of neuralgia, however, are sufficiently well marked by the pains just described which are accompanied by great sensibility of the neighbouring tissues, sharp attacks of pain with slight intermittence, shooting pains, &c. The seat of hysteralgia may also require to be diagnosed; it is sometimes in the body but more frequently in the cervix, according to Malgaigne;¹ it may even be confined to the right or left.

Treatment.—Hysteralgia, although not a fatal illness, is very serious, owing to its duration and the extreme difficulty of curing it. Of three patients Scanzoni² only saw one cured, and even this cure was effected spontaneously as the result of marriage, the disease having resisted all treatment. The two other patients were treated in vain by several physicians. We must therefore attack the evil early and by general and local means powerful enough to give some hope of a good result. The treatment must necessarily vary with the nature of the neuralgia. Judging from my own practice, I think half of all the cases of neuralgia are connected with rheumatism or an analogous diathesis. Therefore we ought to prescribe a treatment appropriate to this malady, sulphur or alkaline mineral waters, vapour baths and hydropathy which is the best sedative as well as an excellent means of treating rheumatism in young women. In addition, we must prescribe the general or local treatment suitable for the special nervous form characterising the neuralgia, which is neither simple pain nor spasm.

The most efficient internal remedies are narcotics and antispasmodics, associated with tonics and even with iron according to the indication. Sulphate of quinine with digitalis or aconite has produced very good results in many cases, especially when the neuralgia, as is often the case, assumes an intermittent or periodic type. When necessary, the attacks may be alleviated by inhalations of chloroform, and local sedatives should be applied to the hypogastrium, uterus and rectum. The transcurrent cauterisation recommended by Nonat may also be tried on the lower part of the abdomen, or better still hypodermic injections of morphia may be given. Suppositories or small injections containing laudanum or belladonna may be introduced into the rectum till narcotism is produced; or vaginal irrigations may be made with decoctions of hemlock, poppy heads, or belladonna in sitz-baths of the same composition. Carbonic acid or chloroform spray may be applied to the cervix. Aran advises the local application of ice, or better still of laudanum. Malgaigne who, with the majority of French writers, thinks hysteralgia much more common than it is, recommends division of one or both lips of the cervix.

The best of all local applications is the hypodermic injection of morphia or atropine. It has been suggested that these injections should be made into the uterine tissue itself, but the latter is so vascular that it bleeds at once on being punctured, and so the injection is apt to be lost; besides, patients affected with uterine neuralgia

¹ *Sur la névralgie du col de l'utérus, &c. Revue médico-chirurgicale*, avril, 1848.

² Scanzoni, *op. cit.*, p. 339.

suffer terribly when the cervix is touched. Therefore it is better to make these punctures in the hypogastrium at some painful point corresponding to the ramifications of the lumbo-abdominal branches.¹ The puncture is made into a fold of the skin, and as soon as the injection is made the finger should be applied to the skin as the canula is withdrawn so as to prevent the return of the fluid; the puncture is then covered by a drop of collodion, when a local and general narcotism is rapidly obtained. The injection should be repeated sufficiently often to prevent the return of pain, and the points of puncture should be varied according to necessity.

In addition to these injections chloral may be given to procure sleep, and bromide of potassium for the hysterical symptoms. It is very seldom that these three principal means, aided by some of the accessory measures mentioned, such as belladonna, henbane, suppositories, fomentations, &c., do not temporarily alleviate the suffering, whilst we must trust to mineral waters, alteratives, specifics, &c., for attacking the source of the evil, *i. e.* the diathetic affection (rheumatism, herpes, &c.) which is generally the hidden cause of uterine neuralgia.

I have obtained such satisfactory results from these means that I am convinced that, when associated with hydropathy, they constitute the most efficacious, if not the only efficacious treatment of hystericalgia.

UTERINE HÆMORRHAGE

Uterine hæmorrhage may occur under three different circumstances:—1, in the unimpregnated uterus; 2, during pregnancy;² 3, after delivery or abortion. These latter forms depend generally on special causes which have to be studied in connection with pregnancy and delivery—that is to say, with the conditions which produce them. I shall, therefore, confine myself to the first kind.

Uterine hæmorrhage occurring in the unimpregnated state is called *menorrhagia* when it is apparently only an exaggeration of the monthly period, and *metrorrhagia* when it is independent of the menses. It may assume various forms: the quantity of blood discharged in the same time may be greater than usual (a phenomenon which often depends on a disorder of the mucous membrane); or the periods may last longer, the result being the same, though due to a different cause (generally to the persistence of congestion); or they may recur more frequently, thus giving a different character to the malady (connecting it with more frequent ovulation). Lastly, there may be an intermenstrual discharge of blood independent of menstruation, and constituting a symptom of an organic disorder or morbid state similar to that which

¹ *De l'efficacité des injections narcotiques sous-cutanées dans le traitement des névralgies.* Montpellier médical, Courty, October and November, 1859.

² Courty, *Mémoire sur le mécanisme habituel de l'avortement dans les premiers mois de la grossesse, &c.*, Montpellier médical, 1860. Barnes, *Lectures on Obstetrical Operations*, 2nd edition. London, 1871, p. 387.

obtains in other organs under the name of hæmorrhage, and which alone therefore has a right to the name of *metrorrhagia*.

Uterine hæmorrhage is also an important symptom, and occurs so frequently that it deserves the serious attention of the physician. It may be idiopathic or symptomatic.

1. The possibility of *idiopathic metrorrhagia* has been wrongly denied. It is not uncommon for the menses to be occasionally more abundant than usual without the existence of any abnormal condition. In some women they may be less abundant one month, and increased in quantity the following month; or having been retarded or suppressed they may return abundantly, as if to compensate for the temporary suspension. Frequent cases of this kind occur at the menopause. They often alternate or coincide with congestions or hæmorrhoids, and like these may disappear. No anatomical alteration is to be seen in the uterus beyond a temporary distension of the capillaries. There are some cases on record of metrorrhagia terminating in death which could not be explained by the existence of any lesion.

CASE 1.—West¹ has related a case of death from metrorrhagia in which no other lesion could be found than a small clot in the cavity of the womb, without any alteration in the mucous membrane. In another case the autopsy is not given.

CASE 2.—Obre² has seen the same occur in a virgin of fourteen years, in whom the first menstrual discharge could not be arrested. Everything was normal except the uterine mucous membrane, which was softened and ecchymosed and detached from the muscular layer in several places.

CASE 3.—Whitehead³ has seen a similar case; only here menstruation had been regularly established for four years. When the girl was seventeen she fell on the ice in the street, and sustained a severe shock. Ten days after the menses appeared, and were followed by profuse hæmorrhage, which lasted five or six days, from the effects of which she only recovered in ten or twelve days. The catamenia returned the following month, and lasted for sixteen days. The next menstrual period they returned, but a few days afterwards they were replaced by a metrorrhagia, which it was impossible to control, and which terminated fatally in thirteen days. At the autopsy no organic lesion was discovered. The uterus was nulliparous, rather larger than usual; its walls, although less firm than usual, were of normal thickness. It contained a clot of blood, which filled the cavity; the appendages were normal.

Menorrhagia is more frequently idiopathic than metrorrhagia: *e. g.* premature and tardy menstruation, uterine epistaxis, hæmorrhages from excessive ovarian pain, from prolonged uterine erection, from inertia and disturbance of vaso-motor innervation.

2. *Symptomatic metrorrhagia* occurs very often, more so than dysmenorrhœa or symptomatic amenorrhœa. It happens more frequently in the intercalary period than during menstruation; it often continues almost uninterruptedly from one period to another with exacerbations corresponding sometimes with the menses, sometimes not.

Metrorrhagia may be symptomatic of local diseases or of general affections not localised on the uterus. Amongst local diseases may be reckoned hemorrhagic parous congestion, defective involution, rarely

¹ West, *op. cit.*, p. 65.

² *British Medical Journal*, 1857; *Gazette méd. de Paris*, 1856, p. 596.

³ *London Medical Gazette*, 1846; *Archives de médecine*, 1846, t. xii, p. 483.

metritis, sometimes softening of the uterine tissue or alterations in the mucous membrane (granulations, fungosities, exfoliations, ulcerations),¹ very often polypi, hydatidiform or fleshy moles, fibroma, cancer; less frequently hæmatoceles, peri-uterine inflammation, ovaritis, organic lesions, cystic or otherwise, of the ovary, especially in their first stages, deviations, flexions, &c. As for ovarian neuralgia, the influence which it is said to have in producing hæmorrhage has been greatly exaggerated. Amongst general affections we may mention: the acute exanthemata, smallpox, measles, scarlatina, typhoid fever (in the course of which uterine epistaxis may occur),² and above all the hæmorrhagic diathesis,³ the influence of which is felt upon the uterus as well as upon all other organs; sometimes plethora, but more frequently impoverishment of blood from Bright's disease,⁴ chloro-anæmia, scorbutus, &c.: lastly, blood stasis in the system of the vena cava inferior from incompetence of the mitral valve, mitral constriction, hypertrophy of the heart, development of abdominal tumours or other chronic maladies. In fact it is much more common than idiopathic hæmorrhage. It is characterised by frequent recurrence and persistency.

Diagnosis.—It is a differential diagnosis that is required. It is not difficult to assure ourselves that the blood comes from the uterine cavity, but it is not so easy to decide whether we have to do with menorrhagia or metrorrhagia; whether the hæmorrhage is symptomatic or idiopathic, active or passive, &c. The knowledge of the causes and analysis of the symptoms facilitate this diagnosis. Amongst the *predisposing causes* age should be taken into consideration. Middle age is the period when hæmorrhages, like all other uterine diseases, are most common. Metrorrhagia is also very common at the menopause, constituting one of its most remarkable phenomena. Brierre de Boismont⁵ has observed fifty-seven cases out of 141 women arrived at the climacteric. It is difficult to believe that metrorrhagia can be idiopathic after the menopause. We know very little as to the influence of constitution, temperament, general health, &c. The influence of hygienic agents seems to be undoubted. According to Saucerotte,⁶ women who inhabit the highest points of the Vosges are subject to hæmorrhages. The influence of hot climates or change of climate, and the abuse of hot baths, as in the East, is certain. What are we to think of that of alcohol, of the abuse of hot-water bottles, and of so many other real or imaginary causes to which great importance has been attached?

Probably a more real predisposing cause is to be found in the structure of the uterus itself, its mucous membrane, its muscular

¹ Occasionally more serious alterations produce metrorrhagia; e.g. the case related by Grailly Hewitt of fatal hæmorrhage after delivery, due to a traumatic aneurism of the uterine artery (*Obstet. Transact.*, v. ix, p. 246. London, 1867).

² Upon uterine epistaxis, so called by Gübler. V. supra, p. 410.

³ Gendrin, *Traité de méd. philos.*, t. ii.

⁴ West, op. cit., p. 54.

⁵ Op. cit., p. 223.

⁶ *Mélanges de chirurgie*, p. 25.

tissue, its vascular system, the activity of its circulation, the inertia of its muscular tissue, &c.

Among *determining causes* simple physical acts (a blow, a fall, the application of leeches to the cervix) may give rise to metrorrhagia, which may assume the character of active hæmorrhage if it is the result of the violence of the reaction rather than of the traumatism itself; but sexual excitement, violence of menstrual molimen, excessive intercourse, especially in the case of prostitutes,¹ as well as influences of the same kind on neighbouring organs, *e. g.* repeated drastic purgatives, are all causes which rather increase the activity of the hæmorrhage than originate it. Although moral impressions more frequently suspend menstruation, they may exceptionally produce an excessive flow of the menses, or even metrorrhagia.

The *symptoms* of metrorrhagia are those of hæmorrhages in general: progressive debility, pallor, chilliness, especially of the extremities, small pulse, tingling in the ears, giddiness, &c. Those of *essential* or *idiopathic* metrorrhagia are variable. Sometimes the discharge of blood and even uterine fluxion are intermittent, the blood flows to the uterus in jerks, the loss seems to cease or at least diminish in considerable proportions, but it soon returns with violence; at other times the discharge of blood is continuous, without pain or colics, but with increasing loss of strength. Sometimes the discharge is pure blood, red or black, but liquid; at other times, after an apparent interruption or after the excretion of a certain quantity of sanguinolent serum, more or less voluminous clots are passed accompanied by uterine colics indicating alternations of distension and contraction of the organ.

Those of *symptomatic* metrorrhagia are symptoms peculiar to each of the morbid states of which the hæmorrhage may be symptomatic. We must beware of confounding metrorrhagia or menorrhagia with the consequences of an abortion at the commencement of a pregnancy. Women are apt to mislead the physician by attributing the unforeseen and abundant recurrence of menstruation to a delay of the monthly period. Generally this delay is due to pregnancy and the recurrence is an abortion, as shown by the nature of the pains, which are real uterine colics, and by the expulsion of an embryo, a villous placenta, or a decidua, on which a circular groove may be seen, indicating the point where the ovum was lodged. The likelihood of this should always, therefore, be present to our mind, and a careful examination should be made. Active and passive hæmorrhage should also be distinguished; for symptomatic metrorrhagia itself may be either active or passive, the result of a simple stasis of blood, or of an energetic uterine reaction.

Active or *sthenic* metrorrhagia, by general or local fluxion, or by vascular expansion, is accompanied by all the signs which characterise fluxionary movements, and by all the symptoms of local congestion and excitement or of general reaction which are peculiar to this patho-

¹ Parent-Duchatelet, *de la Prostitution dans la ville de Paris*, t. i, p. 232, 3^e édit., 1857.

logical act: pain, tension, sense of weight in the uterus, pain and dragging in the loins and groins, pruritus at the vulva, painful tumefaction of the breasts; shooting neuralgic pains in the kidneys and legs; hardness, swelling, extreme sensibility of the hypogastrium; tumefaction, heat, sensitiveness, dark red colour of the vulva, vagina and cervix; a general excitement, a strong and rather quick pulse, followed by weariness, cramp, giddiness, feverishness, and sometimes by various nervous or hysterical symptoms; in short, an exaggeration of the ordinary symptoms of uterine fluxion as they occur at the commencement of menstruation. *Passive* metrorrhagia is asthenic. It is favoured by general conditions not only of debility, atony and asthenia, but still more by those characterised by adynamia, such as scorbutus and other serious constitutional disorders. It is never preceded by premonitory symptoms, nor accompanied by the local phenomena which characterise the hæmorrhagic molimen. There are no signs of local plethora in the genital organs; of the heat, tension and arterial pulsation which characterise fluxionary movements. The pulse is quick, but small and compressible, and there is a general chilliness and want of reaction. The hæmorrhage, which generally occurs suddenly and with a certain moderation, continues uninterruptedly, sometimes without clots when the blood is serous. The clots and colics are to be met with in both kinds of hæmorrhage, but with shades of difference which suffice to distinguish them; for instance, the expulsive pains are less acute and less frequent in passive hæmorrhage, whilst active hæmorrhage is characterised by extreme sensibility or hystericalgia and by repeated uterine colics.

Treatment.—The first question is: Should the hæmorrhage in metrorrhagia, or even in menorrhagia be arrested? In the immense majority of cases this may be answered in the affirmative. The hæmorrhage becomes injurious whenever it passes the limits of menstrual evacuation; for it is insufficient to effect depletion of the organ, it continues or recurs indefinitely, one hæmorrhage is followed by another, the morbid habit is established, the constitution deteriorates, the blood is impoverished, the patient becomes anæmic, and these conditions, in place of being favorable to the cessation of the hæmorrhage, only facilitate it and induce its return, so that from being active it becomes passive. Therefore every means should be taken to prevent and arrest metrorrhagia.

The means to be employed vary according to the nature of the hæmorrhage. The indications are principally drawn from the active or passive character of the metrorrhagia. In the former case we have to contend with the fluxionary movement, the fluxion and even congestion of the organ. In the latter, with exhalation and exudation, as well as with the general debility of the constitution and impoverishment of the blood. The indications vary also according as the hæmorrhage is symptomatic or idiopathic. In the former case, arresting the flow of blood is only a palliative treatment which, though useful, is insufficient as it does not attack the malady which causes the hæmorrhage;

in the latter case, it is from the hæmorrhage itself and its nature that the indications are taken.

I cannot now enumerate the means of treatment of the various maladies which determine symptomatic hæmorrhage. They will be described in connection with each disease. I cannot even review all the means of treatment of the various pathological elements which participate in the production of idiopathic hæmorrhages, for these various elements require to be treated independently of the flow of blood which they may produce, but which they do not necessarily cause. I shall therefore only consider them from the point of view of the share which they take in the production of hæmorrhage.

Metrorrhagia, strictly so-called, being separated from the maladies which produce it, and from the elements which co-operate in its manifestation, it only remains for us to state the indications special to it; these are:—1, to prevent the fluxionary movement from taking place; 2, to divert it when it has taken place; 3, to subdue the congestion and erethism; 4, to employ hæmostatics; 5, to destroy hæmorrhagic-parous organic alterations of the mucous membrane; 6, to prevent hæmorrhage by mechanical obstacles; 7, to treat the impoverishment of the blood and its want of plasticity.

1. *To prevent the occurrence of the fluxionary movement.*—This can be attained by the use of three means: rest, local refrigeration, general heat. There should be absolute rest, the patient lying on her back with the thighs and legs flexed, and supported by pillows, and the head or at least the shoulders low. She should be kept in this position, not rising even to pass water. Local refrigeration is obtained by means of compresses soaked in cold water of the temperature of the room in winter, in spring water or ice in summer; these compresses should be applied to the abdomen and upper part of the thighs and renewed as they become warm.

It is often better in order not to wet the patient, to substitute for the compresses a bladder or gutta-percha bag filled with pieces of ice which can be renewed as they melt, or fragments of ice may be introduced into the vagina every quarter of an hour. General heat should be maintained by blankets, or eider-down quilts, and hot-water bottles to the feet and arms. If necessary sinapisms may be applied to the wrists, arms and even upper part of the chest, the knees, calves and insteps. Ventilation should also be attended to. In all hæmorrhages great care should be taken to renew the air of the room frequently. By these means, not only is a bracing effect produced on the whole body, but a kind of general revulsion is effected on the whole system which has a tendency to divert the fluxionary movement from the uterus; hæmotosis is facilitated, and by the rapid renewal of air in the lungs an activity is given to the general circulation favorable to peripheral circulation and tending to subdue the disposition of fluxionary movements to select one point in preference to all others.

2. *To divert the fluxion by revulsives.*—The most powerful revulsive is bloodletting. It should be from the arm rather than the foot, for the blood should be diverted from the lower to the upper part of the

body, and not merely deviated from the pelvis to the feet. Blood-letting is not always limited to a revulsive bleeding. If the patient is strong, plethoric, and experiencing a movement of general expansion or fluxion, copious depletion should be resorted to. If she has not too much blood, or if there is a tendency to debility, if the bleeding has to be repeated every month as a preventive measure against a menorrhagia which threatens to become habitual, it will suffice to take from $1\frac{1}{2}$ to $4\frac{1}{2}$ ounces from the vein according to Lisfranc's method. When the fluxion, in place of being imminent or recent, is fixed on the organ, derivative applications of leeches or cupping to the hypogastrium, to the iliac regions and loins, will mobilise the congestion and advantageously precede the use of revulsives proper. A powerful revulsive action may be effected in anæmic women without loss of blood by dry cupping of the loins, back, thorax, arms or breasts according to the precept of Hippocrates.¹ In such cases there is no need to fear the use of large cupping glasses acting on the whole of a limb according to Junod's method. The application of ligatures to the root of the four limbs, according to Galen's precept, so as to congest them by retaining in them the venous blood, is a very good substitute for large cupping glasses, which are not always at hand. All that is required are four handkerchiefs folded like scarfs and tied tightly round each limb, and tightened at will by means of small sticks passed through the knot of the handkerchief. I have never had recourse to this means in uterine hæmorrhages, but it has been of such great use in very serious cases of hæmoptysis, that I have the greatest confidence in it. Lastly, sinapisms on the arms are also excellent revulsives which should not be neglected.

If the fluxion is persistent or of long standing, and if it has a tendency to be renewed periodically or to become chronic, more continuous revulsives ought to be employed:—blisters, even exutories, or, if the patient is young, hydropathy in the intervals between the attacks. Lastly, ipecacuanha and antimony as used by Stoll and Finke in metrorrhagia when sympathetic of bilious affections, and emetics generally, may be useful as revulsives as well as means of perturbation. Ipecacuanha in small doses frequently repeated has proved very efficacious, probably by the movement of expansion which it determines towards the periphery.

3. *To subdue the congestion which follows the fluxion or the erethism which accompanies it.*—I have seen patients in whom hæmorrhage was arrested by the application of leeches to the cervix, after the failure of the majority of means usually employed. In these cases the hæmorrhage seemed to be kept up by a painful and persistent congestion of the uterus. The indication is clear; it must not be misunderstood, for no other means than direct depletion of the organ will avail. When general or local nervous and vascular erethism is associated with congestion, sedatives, antispasmodics and narcotics may be indicated. Aran recommends veratrine in large doses, Dickinson digitalis, Béhier opium by the mouth or laudanum in rectal

¹ Translation by Littré, Aphorism 50, Section v, t. iv, p. 551.

injections. The progress of the hæmorrhage must however be watched, care being taken that time is not lost in the use of remedies which produce no effect. It is difficult to know whether the warm bath acts as a sedative or as a general revulsive in the treatment of metrorrhagia; but there is no doubt that in some cases it is sufficient to arrest the hæmorrhage. Unfortunately we have not yet been able to determine when this treatment is indicated. Heat applied to the loins often does great good, and can never do harm. To sum up what we know with regard to this subject, we must be content to say that the application of heat to the lumbar region according to Chapman's plan (the application of an india-rubber bag filled with water as hot as the patient can bear), in order to stimulate the vaso-motor action of the sympathetic ganglia, has succeeded with de Mussy,¹ Cusco and myself. So, too, has the application of heat to the uterus and vagina. A vaginal injection of water as hot as can be borne (as a rule, 45° centigrade) is often the best way of preventing or stopping uterine hæmorrhage. Like Emmet I have tried these injections repeatedly and found them to have an excellent hæmostatic effect (*Annales de Gynécologie de Paris*, mai, 1880). Experience has proved the use of digitalis as an additional sedative of the vascular system; by lessening the frequency of the pulse, it diminishes the impulse by which the blood is incessantly accumulated in the congested organ.

4. *The use of hæmostatics, strictly so called, astringents, styptics, and coagulants.*—These means are especially indicated in the treatment of passive metrorrhagia when there is exudation as well as impoverishment of blood and general debility; they are also very often indicated in the palliative treatment of symptomatic metrorrhagia. The local application of cold to the hypogastrium by a bladder filled with ice, cold compresses, enemata, sitz-baths, vaginal plugging with ice, should be made continuously. The most convenient plan is for the patient herself to introduce ice frequently into the vagina, the water discharged being received by a sponge placed under the fourchette in a piece of waterproof. Acids and astringents should be taken internally. Those most employed are: vinegar and water, or a few drops of dilute sulphuric acid in a glass of lemonade, a spoonful of which may be taken every quarter of an hour. This simple means is often very successful. Tincture of cinnamon, as advised by Van Swieten, the Germans, Récamier, Gosselin and Aran (from 1½ to 5 drachms in four ounces of water, of which one tablespoonful every hour), alum, acetate of lead, catechu, tannic acid, and especially rhatany, are recommended, as in all hæmorrhages. The extract of rhatany, given in an enema (15 gr. to one quart), or in mixture (℞. Ext. Rhat. ʒj, Syr. Aurant. ʒj, Aq. ʒiv. Sig. ʒss every two hours), is one of the most efficacious and the least dangerous of astringents.² I have often tried perchloride of iron, but do not trust

¹ *Annales de Gynécologie de Paris*, July, 1875.

² I often give the following prescription:—Infuse 4½ gr. of digitalis leaves in 4 oz. of water. Add 1 oz. of syrup of comfrey, 5 drachms of syrup of

to it. If indicated by impoverishment of blood, anæmia, or a scorbutic condition, it should be prescribed in the dose of from 15 minims to 3j in a glass of water, of which one tablespoonful should be taken every two hours, followed by cold milk to remove the disagreeable sensation left in the throat. In chronic metrorrhagia with chloro-anæmia I give from 5 to 15 drops morning and evening in water followed by a glass of milk. It may also be applied directly to the uterine mucous membrane. Weber, of St. Petersburg, injects a solution into the uterine cavity. I have done the same, commencing with small quantities, and trying to avoid the formation of clots, the expulsion of which would be painful and might cause additional hæmorrhage. I prefer the use of the tincture of iodine. Uterine specifics, *i. e.* drugs which have the property of exciting uterine contraction as well as of favouring hemastasis, are employed along with the preceding in the treatment of metrorrhagia, *e. g.* savin and ergot, the latter especially. I generally prescribe 4 grains every six hours, or if necessary every three hours, in a little coffee or brandy or sugar and water. When the action has to be kept up for some time I use ergotine instead.¹ The application of electricity to the uterus, by inducing contractions of the tissue, is a valuable adjuvant of ergot, especially when the latter is not tolerated; the *interrupted current* should be used.

5. *To destroy the organic alterations by which the discharge of blood is produced, and to modify the state of the mucous membrane in which these alterations are developed.*—Récamier's curette renders great services in such cases. I have had a broader one made, and also two others of a different pattern (*see* p. 225), and with these instruments can remove fungosities however large they may be, and even small polypiform excrescences. There are hæmorrhages that can be arrested in no other way. It is sometimes necessary to dilate the uterine orifice by sponge tents before introducing the curette. After such operations, local hemastatics or caustics ought almost always to be applied to the uterine mucous membrane and cavity by means of injections.² I often use a camel's-hair brush saturated with tincture of iodine or perchloride of iron, or rolled in the powder of nitrate of silver, in place of injections; sometimes I inject a piece of solid caustic by means of a canula with piston (*see* p. 222). The medicaments most commonly used as injections to modify the mucous mem-

ether, and 5 drachms of tincture of cinnamon, 1 drachm of extract of rhatany, 15 gr. of Bonjean's ergotine, and 1½ gr. of extract of opium. Shake the bottle and take one dessert spoonful every six, or if necessary every four hours.

¹ The hypodermic injection of ergotine is very convenient; the usual formula is 15 gr. of ergotine (Bonjean) dissolved in 100 minims of pure glycerine and 3ij of distilled water. Two Pravaz syringes are filled and injected: ½ gr. to 1½ gr. of ergotine will arrest hæmorrhage in a few minutes. Doubtless the hæmorrhage often occurs again; the hemastasis is only temporary, but even that is a great gain.

² Réal, *Thèses de Paris*, 1852; Dupierris, *Gazette des hôpitaux*, 1869; Guyot, *Thèses de Paris*, 1868.

membrane are : alum, tannin, perchloride of iron, tincture of iodine, or a concentrated solution of nitrate of silver.

6. *To prevent the discharge of blood by a mechanical obstacle* is the last and often the first means to which the continuance or violence of the hæmorrhage obliges us to resort ; a heroic means the use of which must not be neglected whilst there is yet time. This means is plugging. It must be preceded by an iced injection of solution of alum, and by the application to the uterus of a pledget of lint saturated with tincture of perchloride of iron or charged with a hemastatic powder ; the vagina is then filled with cotton wool, the last tampon being kept in place by a T bandage. There is nothing further to do than to watch lest the hæmorrhage which has been arrested in the vagina should take place internally, distending the uterus and passing along the Fallopian tubes. Should this occur, which rarely happens, the plugging must be renewed, and the other means previously described must be once more employed with increased energy.

In cases of hæmorrhage kept up by uterine inertia, in thin women in whom the abdominal parietes are easily depressed, I should be inclined to try compression of the aorta before plugging. I do not understand the objections which have been made to this method. I have seen two women saved by it after delivery : the aorta was compressed by the midwife or myself for three hours, during which time, by emptying the uterus of clots, by irritating the cervix, by grasping the fundus and administering ergot I succeeded in getting the womb to contract, and was rewarded by the formation above the pubis of the hard reassuring uterine globe.

7. *To treat the debility and impoverishment of blood which dispose to hæmorrhage by the defective plasticity of this fluid and by the facility given to the production of fluxionary movements or passive congestions by defective equilibrium.* Whatever the nature of the hæmorrhage may be, care must be taken to prevent its return by using means to prevent fluxion, to increase the plasticity of the blood, to give tone to the vessels, to strengthen the constitution by a good regimen, tonics, bark, iron, &c. We must prevent relapses as in all uterine diseases, remembering that we can only be sure that a cure has been effected after the recurrence of several normal and regular monthly periods.

CHAPTER II

CHANGES OF POSITION—DISPLACEMENTS—DEVIATIONS—FLEXIONS—INVERSION

WITH the exception of cases of hernia, prolapsus, retroflexion, complete retroversion and inversion, simple changes of position very seldom determine the development of serious morbid symptoms. They deserve attention, however, owing to the complications which precede, accompany or follow them, and which are sometimes the chief cause of the pains felt. These maladies are not only mechanical lesions,

they may be designated: diseases in which an alteration of the mechanical conditions of the uterus plays the principal part, causing a disturbance in the relationship of this organ with neighbouring organs. This disturbance may occur in three ways according as it may affect: 1, the means of suspension (utero-sacral ligaments) which form a suspensory ring for the organ, ensuring its fixity of position in the pelvis at a certain height; 2, the supports direct or indirect (broad and round ligaments, vaginal attachments, pelvic connective tissue), which keep the longitudinal axis of the uterus in the normal median inclination, whilst allowing divergences which its natural indifference for a fixed position renders compatible with health; 3, the consistency of the uterine tissue, the relative dimensions of the walls and borders, the reciprocal relations of the two segments (body and neck) which determine the preservation of the normal form of the organ, and the natural relations of the various parts with each other. According to these three modes of origin the primitive alteration leads to a secondary one: 1, in the position of the organ; 2, in its absolute direction and its relations with neighbouring organs; 3, in the relative direction or the reciprocal relations of its two segments. In the first case this secondary alteration takes the name of *displacement*, in the second that of *deviation*, in the third that of *flexion*.

1. *Displacements* of the uterus are, therefore, changes in the *position* of this organ. The womb, not being properly retained in place by its suspensory ring, or yielding to the pressure or traction exercised by a neighbouring organ, abandons its proper place. It escapes partially or entirely from the pelvic cavity by a subcutaneous opening, and forms a *hernia* under the skin (*hysterocele*), or it remains in this cavity, but at a different spot from its natural position, giving rise to *displacements* properly so called, horizontal or vertical, the most important of which is descent (*prolapsus*). Herniæ of the ovary and Fallopian tubes are analogous displacements, and will be described at the same time as those of the uterus.

2. *Deviations* are changes of *direction* of the uterus as a whole, or displacements of the vertical axis of the organ, independent of those of its suspensory ring, the latter either preserving its normal position or not. They vary in degree, from the slightest inclination to the most complete version.

3. *Flexions* are alterations in the *form* of the organ owing to a change of direction of one portion with regard to the other. The organ as a whole may or may not preserve its normal position and direction. It follows that flexions may either exist alone or coincide with displacements and deviations. They sometimes coincide with another change of direction, which it is interesting to take into account, viz. *deviation of the transverse axis*. This axis turns slightly sometimes to one side sometimes to the other, so that the anterior surface of the uterus, instead of looking straight forwards, looks forwards and to the right or forwards and to the left. This deviation is of little consequence when both segments of the womb are equally affected, but if the deviation affects them unequally there is *torsion*,

which may cause other symptoms, and be the source of special indications.

4. Lastly, *inversion* is another mode in which the statical conditions of the uterus may be altered. Cruveilhier compared it to prolapsus, in common with which it has the anatomical characteristic of invagination, whilst, in common with flexions, it has a change in the mutual position of the various parts of the uterus with regard to each other. It is characterised also by a change in the reciprocal relations of its two surfaces, the internal surface gradually becoming external and convex, whilst the external becomes internal and concave. It follows that the organ is in a sense turned inside out, like the finger of a glove.

With the exception of inversion, which is essentially a morbid condition, and prolapsus, which involves destruction of the suspensory attachments of the womb, all the different changes of position (displacement, deviation, torsion, flexion) may occur in foetal life which, representing a certain period in the development of the genital organs, or rather a stage in the progressive changes in their position in the pelvis, can only be explained by the influence exercised on them by the normal or abnormal evolution of the neighbouring organs.

Freund,¹ in a recent work on the development and changes in position of the rectum, bladder and genital canal from the sixth week of foetal life up till birth, shows that the changes in position brought about by organic evolution simultaneously in the rectum and bladder, cause inverse changes in the uterus; that the distension of the rectum by the meconium and that of the bladder by the urine exercise an important influence upon the elevation of this organ. Lastly, that the descent of the intestinal convolutions into the pelvis, the daily evacuations of rectum and bladder, and the increased size of the pelvic cavity, notify a period of restitution or return, during which the uterus is liberated from the temporary changes in position which the development of the pelvic organs had imposed upon it. These changes, however, may become permanent; normal at one period, they sometimes persist as anomalies. The pelvic organs themselves may be developed abnormally, new alterations in the natural position of the uterus may be produced, and may persist and constitute so many pathological elements new in the history of the changes in position of the uterus. These changes are met with in about one third of the patients affected with uterine disease, either constituting a disease in themselves or complicating some other malady or organic disorder. They occur, I think, less frequently in the south of France than in the north, especially prolapsus. As to relative frequency, antelexions and anteversions² are much the most numerous; then come retroflexions and retroversions; then prolapsus, and lastly, lateroversions and lateroflexions, double incurvations, torsions, displacements of the organ as a whole, either forwards, backwards or

¹ Max Bernhard Freund, *Die Lageentwicklung der Beckenorgane insbesondere des weiblichen Genitalcanals und ihre Abwege*. Breslau, 1864.

² See pp. 17, 23.

laterally. Inversions are rarest of all, with the exception of hernia of the uterus and ovaries.

DISPLACEMENTS

The importance of displacements of the uterus, from a practical point of view, depends on whether they are simple or complicated. Ascent, descent and horizontal displacements, such as lateral position or lateral migration and even antero-posterior migration may generally be ranked as simple displacements. Whilst, on the contrary, cases of hernia and prolapsus must be considered as complicated displacements.

1. *Hernia of the Ovaries and Fallopian Tubes*

This is sometimes produced by an alteration affecting the organs themselves, sometimes by displacements of the uterus or changes in it.

I. *Hernia of the ovary* is not the only displacement of this organ. Congestion or inflammation may increase the size and weight of the ovary and cause its displacement into the pelvis, especially *descent* either *laterally* or *behind the uterus*.¹ This displacement is easily discovered by rectal and even by vaginal touch, as well as by the increased size and sensibility of the ovary. Its pathological sensibility is developed to such an extent, that the least pressure produces intense pain.—On the other hand, when the ovaries are merely dragged by a deviated or flexed uterus, it is seldom that this displacement is not at last complicated by congestion of these organs. Lastly, when the displacement coincides with ovarian inflammation the phlegmasia often extends to the peritoneum, especially if the ovary, Fallopian tube and uterus are affected simultaneously. Peritonitis generally leaves vicious adhesions between the ovaries and neighbouring organs. These adhesions, by rendering displacements of the ovaries permanent, form, according to Madame Boivin, one of the most frequent and least known causes of abortion. They attach the ovary sometimes to the Fallopian tube or to the uterus (which causes sterility), sometimes to the cæcum, to the colon, to the sigmoid flexure, to the rectum or to the walls of the pelvis.²

Herniæ of the ovary are displacements outside the pelvis, which occur less frequently than the preceding, but yet oftener than is generally believed. The first detailed case was published in the seventeenth century by Bessière, a surgeon in Paris. Deneux³ wrote an interesting paper on this subject in the beginning of this century. Velpeau⁴ described this disease under the name of *ovarioncie*. Several

¹ Braun has described some of these displacements under the name of *ovario-vaginal hernia* (*Monatsschrift für Geburtsk.*, Bd. xiv, S. 472).

² Barnes gives a very practical *résumé* of the principal causes of displacements of the ovary, *op. cit.*, p. 297.

³ *Recherches sur la hernie de l'ovaire*. Paris, 1813.

⁴ *Dictionn. en 30 vol.*, t. xxii, p. 558. Paris, 1840.

new cases have been recently published.¹ I have myself seen five cases of ovarian hernia: a right inguinal hernia, reducible, in a child of ten (probably congenital); a right crural hernia, irreducible, in a virgin of forty, which sometimes swelled and became painful at the monthly period, and was at one time attacked by inflammation, when it developed symptoms of stricture, which yielded to antiphlogistics and purgatives; a right crural hernia in a woman of forty-two, who assured me that the tumour, which had existed for fifteen years, became painful and larger at every monthly period; she succumbed to symptoms of stricture and peritonitis, the slow progress of which (about fifteen days) would have allowed of her being saved, had she not obstinately refused any kind of operation; a left crural hernia in a nullipara of fifty, who had ceased menstruating for four years, and who remembered having sometimes experienced pains in the tumour during menstruation; she had worn an elastic bandage for twenty-five years to contain the hernia, the nature of which had probably been misunderstood; a left inguinal hernia, probably congenital, in a virgin of twenty-six, forming in the groin a tumour very sensitive to the touch, very painful and larger at every monthly period, and which coincided with a marked obliquity of the uterus, the cervix of which looked backwards and to the right; the puffiness of the tumour led to the supposition that the Fallopian tube shared in the displacement; a bandage tried for some months had to be abandoned, on account of the pain that it caused.

Inguinal ovarian hernia is more frequent than crural in newly-born children, and indeed at every age, contrary to what we might expect, the reverse generally being the case with intestinal herniæ in women.—According to Deneux *crural* is to *inguinal* in the proportion of one to nine, according to Murat two to nine.—The *ischiatric* or dorsal has been described by Papen,² who discovered in a hernia the presence simultaneously of the intestine and right ovary; Camper, in 1759, found one, in the sac of which the left ovary alone was contained.—*Umbilical ovarioncia* may occur in cases of pregnancy or of any uterine disorders sufficient to cause displacement of the ovaries towards the umbilicus.

Ovarian hernia may be simple or double. In the latter case it may occur on both sides at once, through the corresponding openings, as in Pott's case,³ where both ovaries were removed; or through different openings, such as the umbilical and ischiatic, as in Camper's case. According to the statistics of Puech, completed since the publication of his paper,⁴ there are on record 82 cases of inguinal hernia, 12 of crural, 2 of ischiatic, 3 of abdominal (the results of abscess or of Cæsarian operation), and 1 through the foramen ovale (Kiwisch); but of the 82 inguinal 50 are undoubtedly congenital, 16 doubtful, 16 really accidental. Congenital hernia has been found twenty-six

¹ Loumagne, *De la hernie de l'ovaire*. Paris, 1869.

² Haller, *Disputationes chirurg.*, 1750.

³ Pott's Works, vol. iii, p. 329. London, 1783.

⁴ *Des ovaires, de leurs anomalies*. Paris, 1873.

times unilateral, twenty-four times bilateral or double.—They are often complicated by malformations of the genital organs, *e. g.* accompanied four times with *uterus unicornis* or *bicornis*, fourteen times with hermaphroditism, sixteen times with apparent or real absence of the uterus.

From an analysis of the cases just mentioned we may conclude that *ovarian herniæ* belong to two quite distinct classes: 1, *congenital herniæ*, always inguinal, often double, and when single generally left, caused by an *abnormal descent of the ovaries* analogous to the normal descent of the testicles, constituting anomalies rather than diseases, and coinciding usually with anomalies of the genital organs, such as embryonic uterus, *uterus unicornis*, hermaphroditism, &c.; 2, *herniæ* properly so called, *accidental* and morbid, right or left indifferently, inguinal or crural, oftener crural, frequently following an intestinal hernia, in which case the ovary may occupy the sac either alone or simultaneously with the intestine, epiploon, &c., occurring in well-formed adult women.¹

If *congenital hernia* is *inguinal* it is because the persistence of Nuck's canal favours its production. Lassus² gives an example. If *accidental hernia*, on the contrary, seems to be more often *crural*, it is because, like intestinal hernia, it takes place through the abdominal opening which is the widest in women.

Ovarian hernia when congenital and observed in early life generally contains only the ovary; it may be the same in the adult; but in old *herniæ* the ovary has sometimes dragged down with it the Fallopian tubes, the uterus, the vagina, and the intestine. When a hernia of long standing is complex, it seems to be because the ovary has carried with it the Fallopian tube and even the uterus; for by the fact of its displacement the ovary drags the womb to the side of the herniary tumour; the uterus then executes two distinct movements, a swinging one, by which its fundus is inclined forwards, and another of rotation, which directs its posterior surface towards the side of the displacement; one of its angles is then turned towards the ring through which the ovary has passed; the intestine presses and increases the uterine deviation, tending to complicate the ovarian hernia with that of the Fallopian tube and even with the uterus. *Ovarioncia* is very seldom complicated with enterocoele. Lastly, ovarian hernia may be reducible or irreducible. Its irreducibility may depend on increased size, adhesions or strangulation.

II. *Hernia of the Fallopian tube* may be produced, according to Nélaton,³ by ovarian hernia. The oviduct very rarely escapes through one of the abdominal orifices by itself. Such a case, however, has been described by Scholler: a little girl, who died three weeks after

¹ Puech, who has collected the greatest number of cases of ovarian hernia, thinks that a radical distinction should be made between these two kinds; he therefore proposes that congenital ovarian hernia should be called *inguinal ectopia*.

² *Méd. opér.*, t. i, p. 211. Paris, an iii.

³ *Patholog. externe*, t. iv, p. 440. Paris, 1857.

birth, had a tumour in the right inguinal region, which reached as far as the labium, and contained the Fallopian tube, red and swollen, but without adhesions. The round ligament of the same side was shorter than the other. The uterus was slightly displaced, its axis not being parallel with that of the body.

Diagnosis.—This is drawn from the following data: at the groin, in the direction of the principal axis, or in the labium, or even below the crural arch, there is a small ovoid tumour, circumscribed, painful, dull on percussion, reduced with difficulty and rarely spontaneously, always without gurgling although slightly indented, of a dense homogeneous consistency, not easily detached from the soft parts; if we pull it, so as to increase the displacement, we perceive behind it a flattened fibrous cord passing through the ring. The pain is increased by pressure, by dorsal decubitus or by lateral decubitus on the opposite side from the hernia (Seller), by the movements of the legs, by stooping and rising again, so much so as to cause limping (Guersant) and to make all work impossible (Imbert, Percival-Pott, &c.); it is also aggravated by pressure on the hypogastrium, by pushing the fundus of the uterus from the seat of the hernia, or drawing the cervix near it with the finger (Lassus); it is propagated into the pelvis and loins by a very painful sensation of dragging; it extends from the seat of the hernia to the uterus and if, with the end of the finger introduced into the vagina or rectum a considerable movement is conveyed to the womb from the side opposite to that of the tumour, this movement is transmitted to the contents of the hernia (Lassus). This movement should be made suddenly, and is aided by pressure on the hypogastrium from the other hand, or better still by means of the uterine sound,¹ which acts simultaneously on the whole of the uterus and at the same time reveals the inclination of the fundus of the organ towards the hernia; it is well for an assistant to place his fingers on the tumour in order to judge of the amount of movement communicated; similar movements cannot be transmitted to an enterocoele (Loumaigne's case).² Pain which is absent in some patients and in a state of rest or in the intercalary period, is developed on the contrary by exertion, the advent of menstruation, coitus, &c.;³ it increases also with the size of the organ at puberty, at every menstrual period, during gestation and by taxis; it may increase to such an extent as to be symptomatic of strangulation.

Although these symptoms would seem sufficient for distinguishing between an ovarioncia and an intestinal or epiploic hernia, an abscess of the groin, a lymphatic tumour, &c., many mistakes have been made. Inflammation, atrophy, cystic, cancerous or tubercular degeneration of the ovaries, are sometimes met with simultaneously and increase the difficulties of diagnosis. We must also remember that, even

¹ Huguier, *Traité de l'hystérométrie*, p. 202. Paris, 1865.

² When digital touch cannot be practised, owing to absence of the uterus or in the case of children, examination must be made through the bladder and by rectal touch.

³ In ovarian hernia, coitus becomes sometimes so painful that marital intercourse is impossible. Beigel gives instances of this (op. cit., t. i, p. 436).

when inguinal hernia is double, it is no obstacle to menstruation, and that while it may cause sterility (when the ovary is not accompanied by the Fallopian tube in the common hernial sac), it does not absolutely prevent uterine pregnancy, and that it frequently predisposes to extra-uterine pregnancy.¹

Treatment.—This consists in reducing the ovarian tumour and in keeping it reduced. It is easily done when the hernia is recent and when the ovary is not adherent to the sac. As a rule, however, after a short time the tumour ceases to be reducible. In such cases it must be protected from blows and from friction by a suitable bandage, *e.g.* a truss with a concave cushion.

When symptoms of strangulation are developed the patient should be kept in a position of semi-flexion, and leeches, poultices and emollient or narcotic fomentations should be applied over the tumour. If the strangulation persists an operation is indicated,² *i.e.* the ring which produces it must be incised; for it is enough to cause death. I have seen a woman affected with crural hernia of the right ovary succumb to peritonitis as a consequence of strangulation of the hernia. The ovary can seldom be reduced after incision; it will be found too adherent to the internal surface of the sac. The adhesions must first be destroyed and reduction made afterwards, or else we must imitate Lassus, and after having incised the ring apply emollient applications to the ovary, dress it simply, and when the inflammation has passed exercise moderate and methodic pressure.

If the ovary is degenerated, cancerous or transformed into a multilocular cyst, it should be removed. In some cases, as in that of Pott, the operation has not been followed by any accident. In Pott's³ case *there was double inguinal ovarian hernia* in a woman of twenty-three; the removal of both ovaries was followed by cure, but menstruation ceased. Meadows⁴ published a very interesting case of *inguinal hernia of the right ovary*, which was successfully removed. In other cases extirpation is not necessary, the hernia being found reducible after incision of the ring. Loper⁵ obtained a cure in this way. The case was one of *inguinal hernia of the right ovary occurring after delivery in the sac of an old enterocele*. Kelotomy necessitated the destruction of some adhesions and also incision in order to allow of the reduction of the ovary. The operation was followed by cure. By adding these three cases to those already recorded we find that out of sixteen cases of reduction or extirpation of ruptured ovaries there have been nine definite cures and seven deaths, five of which followed extirpation. Although these statistics are not en-

¹ Balin, *Art de guérir les hernies*, p. 150. Paris, 1768.—Widerstein, *Gazette hebdomadaire de médecine*, 1853, p. 79.—Rektorzik, *Monatssch. für Geburtsh.*, Bd. xvi, S. 475, 1860.

² Owen, *British Med. Journal*, 13 Dec., 1873.—Wibaich, *Thèses de Paris*, 1874, n°. 469.

³ Pott's Works, vol. iii, p. 329. London, 1783.—MacCluir, *American Journal of Obstetrics*, vol. vi, p. 613.

⁴ *Trans. of the Obstet. Soc.* London, 1861, p. 438.

⁵ *Monatssch. für Geburtsh.*, 1866, S. 453.

couraging we cannot avoid the necessity of operation when life is in danger, but it should only be resorted to in such cases.

We may therefore lay down the following rules: 1, to incise and reduce, in children and young women, congenital and recent herniæ which have neither been inflamed nor as yet present any extensive adhesions; 2, to protect, in women who are mothers, by means of a truss with a concave pad, herniæ which are not very painful, but which have become irreducible owing to adhesions; 3, only extirpate the ovaries when the hernia is irreducible, adherent, painful, and has developed symptoms of strangulation and inflammation which have resisted antiphlogistic treatment and endanger life.

2. *Hernia of the Uterus (Hysterocele)*¹

It is not uncommon to see the uterus, when distended by pregnancy, protrude between the recti muscles (separated by several preceding pregnancies), and hang down like a kind of *wallet*, even as low as the thighs when the excessively distended linea alba is incapable of supporting it; it is rare, however, to see this organ undergo the displacement for which the name of hernia is reserved. A certain number of authentic facts, however, prove that the uterus may be dragged a certain distance from its normal position and, with other abdominal viscera, become surrounded by a hernial sac, in which it may become developed, contain the product of conception, and reach the natural term of gestation.

I. Herniæ of the uterus *during pregnancy* ought not to be confounded, as they have been by Desormeaux and Dubois,² with those projections of the gravid womb which take place owing to a stretching of the *linea alba* or of some other part of the musculo-aponeurotic walls of the abdomen. There is a great difference between this accident commonly known as pendulous belly, and real uterine hernia, whether produced by an artificial opening caused by stretching or effected through the natural openings or through the abdominal rings which usually give passage to other ruptured viscera.

Hernia of the linea alba may occur during gestation and even at the moment of delivery.³ *Inguinal hernia* may also take place during gestation, in spite of the great development of the uterus in advanced pregnancy, its production being favoured by the anterior existence of a large enterocele. The circumstances which favour and those which determine the formation of these herniæ are very variable, as the following facts seem to show.

Sennert⁴ relates that a cooper's wife received a blow from a stick in the groin at the beginning of pregnancy; a few days later a hernia

¹ Döring, *De herniæ uterinæ atque hanc justo tempore subsequentis partûs Cæsarei historiâ*. Vitemb., 1612.—Oneides, *Dissert. de herniâ uteri*. Leyde, 1780.

² *Répertoire général des sciences médicales*, t. xxx, p. 331. Paris, 1846.

³ J. L. Petit, quoted by Boivin and Dugès.—Paccini, *Hernia of the linea alba; operation, cure*, *Gazette médicale de Paris*, 1834, p. 409.—John Bell, two cases, *Id.*, *ibid.*, 1849, p. 308.

⁴ *Medic. practica*, lib. iv, sect. 2, chap. xvii, p. 654, quoted by Verdier, *Mémoires de l'Académie royale de chirurgie*, t. ii, p. 2.

was seen at this point; it was formed by the uterus. The pregnancy reached term; the Cæsarian operation was performed; the child lived nine years, the woman died suddenly on the twentieth day, the autopsy failing to reveal the cause of death.

Döring¹ in a letter to Fabrice of Hilden, gives the history of a woman who at her last pregnancy had a hernia of the uterus, probably inguinal, and who had also to undergo the Cæsarian operation; the child although robust died in a few months, the mother succumbed in three days; Cruveilhier thinks that the hernia existed before pregnancy and that it was wrong to perform the Cæsarian section; the following fact seems to justify this opinion. Saxtorph² relates that a woman had a tumour in the inguinal region for some years; she became pregnant for the fifth time; during pregnancy the tumour gradually increased, the uterus evidently being contained in it; delivery took place naturally and the uterus remained projecting under the integument. In other cases, however, the hernia has really been produced during gestation, and when it has been impossible for delivery to be effected naturally, Cæsarian section has occasionally been successful. Rousset³ tells of a woman whose uterus had escaped through the centre of the abdomen and who yet had a natural delivery; after another pregnancy the result was equally favorable, although the hernia was irreducible. Ruysch⁴ relates the case of a uterine hernia produced after an abscess, which was reduced at the time of delivery by the midwife and parturition was normal. Ledesma⁵ has seen a right inguinal hernia of the uterus produced in the third month of a seventh pregnancy, in a woman previously affected, and even before marriage, with inguinal enterocele. Attempts at reduction having failed he performed the Cæsarian operation, which was successful as regards both mother and child; the uterus continued irreducible. Fischer⁶ met with a woman of forty-four who had had seven children, and who suffered greatly at every pregnancy from a large right inguinal hernia, which she had ten years before her marriage. Towards the end of her eighth pregnancy the uterus escaped through the inguinal ring and was held fixed by the neck of the sac; labour having commenced with rupture of the bag of waters without being able to terminate naturally, Cæsarian section was performed. The patient died the fifth day, the child lived.

II. Herniæ of the *unimpregnated* uterus are more difficult to explain on account of the deep position of this organ; they probably often depend on a congenital tendency or on the appendages of one side, which have been previously displaced, dragging on the uterus. They have been found in several autopsies.⁷ Cruveilhier thinks that hernia

¹ *Œuvres de Fabrice de Hilden*, p. 833, edit. of 1646.

² *Bibliothèque médic.*, t. lxxvii, p. 59.

³ Boyer, *Traité des mal. chirurg.*, t. ix, p. 386.

⁴ *Advers. anat. medic. dec.*, ii, p. 23.

⁵ *Journal de la Soc. de méd. prat. de Montpellier*, t. i, p. 441. Montpellier, 1840.

⁶ *Annales de la chirurgie française et étrangère*, t. v, p. 249. Paris, 1842.

⁷ Chopart et Desault, *Traité des mal. chirurg. et des opér. qui leur conviennent*, t. ii, p. 305.—Lallement, *Mém. de la Soc. méd. d'émul.*, 3^e année,

of the uterus is usually consecutive to that of the ovary and Fallopian tube, and that the womb is gradually displaced by a kind of attraction. Deneux explains how uterine hernia follows that of the ovary by means of a double movement of rotation from below upwards and from one side to the other; the fundus looks forwards, the posterior surface becomes lateral, the angle corresponding to the affected appendages is naturally drawn towards the ring, and finally passes through it; the enlarged size of the hernial sac is made partly at the expense of the broad ligament which is also displaced. Hernia of the ovary would in this case be the first stage of a displacement, of which the last stage would be hernia of the uterus;¹ hence the utility of describing these displacements together. However, in the Atlas of Boivin and Dugès (Pl. xi, fig. 3) there is a drawing after Cloquet, of a right crural hernia of the uterus, ovaries and Fallopian tubes, in a newly-born child, where the fundus of the uterus seems to have been first displaced. The persistence of the canal of Nuck after birth explains the possibility of hernia of the uterus; the position of the uterus and its annexes above the pelvic cavity at birth accounts for its comparative frequency in children. To sum up, there are several varieties of uterine as of intestinal hernia, according to the position and anatomical relations of the sac: 1 *Inguinal hysterocele*. Sometimes the whole uterus, sometimes the fundus only, enters the external inguinal ring or only the internal. These cases, quoted by Chopart, Lallement and Cruveilhier are very rare, especially those in which the displacement affected the gravid uterus. Several of the cases published are doubtful, or may be considered as extra-uterine pregnancies occurring beyond the inguinal canal; Skrivan and Lumpe's² cases may be interpreted in this way. A real hernia of a gravid uterus can only take place through the inguinal canal when it has been preceded by a very large intestinal hernia.—2. *Crural hysterocele*. The fundus enters the crural ring. Sennert, Döring, Saxtorph³ have seen it occur in pregnancy, and Lallement in the unimpregnated state.—3. *Umbilical hysterocele* has never been seen hitherto except in the gravid uterus. The cases mentioned by Léotaud⁴ and Murray⁵ may be added to those already cited: in Murray's case reduction was effected; in Léotaud's reduction was very easy, but the tumour could not be kept reduced without embarrassing the respiration excessively. Delivery took place at term without any accident.—4. *Ventral hysterocele* is the most frequent; it is sometimes produced after rupture of the aponeuroses, especially at the linea alba, sometimes after laceration of the abdominal muscles, especially of the *recti*. I have seen three cases—two on the *linea*

p. 323, and *Bulletin de la Faculté de méd. de Paris*, t. i, p. 1.—Cruveilhier, *Anat. pathol.*, xxxiv^e liv., pl. 6.

¹ *Beiträge zur Geburtsk. und Gynaek.*, Bd. vii, 1870.

² *Zeitschrift der Ges. der Aertze*. Vienna, 1851, No. 9, and 1853, No. 6.

³ *Collect. Soc. Hafn.*, 1775, t. ii, p. 323.

⁴ *Gazette des hôpitaux*, 1859, p. 419.

⁵ *Lancet*, April, 1859.—*Journal des connaissances médico-chirurgicales*, 1859, p. 654.

alba and one on the right side of the hypogastrium. Puech had a case of this kind as the result of several deliveries in quick succession.

The diagnosis of uterine hernia is not difficult, even in the unimpregnated organ; palpation associated with vaginal touch will help the practitioner to distinguish the nature of the tumour and the kind of displacement. It is not indispensable to feel the point of a sound introduced into the uterine cavity through the sac, as Kiwisch¹ says.

Treatment is less easy. In the rare cases in which the hernia is reducible, reduction should be made and maintained by a bandage, as in the treatment of enterocele. In the more frequent cases in which the existence of adhesions or the development of pregnancy renders reduction impossible, we must content ourselves with supporting the uterus by means of a well-made and very elastic abdominal belt, or by means of a truss, to which if necessary an elevated *point d'appui* can be given by making it pass over the shoulders. When pregnancy exists and the hernia takes place through a natural opening like the inguinal ring, which is not susceptible of much dilatation, instead of through the stretched *linea alba*, which one may hope still further to enlarge, several suggestions occur: Should attempts at reduction be made involving incision of the ring as in cases of strangulated hernia? Should abortion be induced in order to prevent the dangers which delivery at term would cause to the mother? To these questions I can give no positive answer. Lastly, when the ruptured uterus has reached the term of gestation there is no room for hesitation. Cæsarian section must be performed at the very commencement of labour; experience having shown that it has sometimes saved the mother as well as the child.

3. *Horizontal Displacements*

Horizontal displacements (*antero-, retro-, or latero-positions*) can hardly be produced except by the development of a tumour in some part of the uterus (sub-peritoneal fibro-myoma) or in the pelvic cavity, either a retro-uterine hematocele, a phlegmon, pelvi-peritonitis, a multilocular cyst or some other malady of the ovary, disease of the bladder or rectum, or a tumour of the bones of the pelvis, &c. It is seldom that they are not complicated with deviation. The diagnosis is easy. As for treatment, since they do not constitute a disease but only a symptom, we must discover the malady which has caused them and treat it.

The uterus may be pushed *forwards* against the pubis by a fibroma²

¹ Scanzoni, op. cit., p. 121.

² I have lately seen a patient die from the effects of the compression exercised by a fibro-myoma of the posterior segment of the uterus upon the neck of the bladder and the rectum, the functions of which had been totally suspended by the development of the tumour within the pelvic cavity and the consequent flattening of the large intestine, which had become quite impermeable to the feces. Unfortunately the patient, to whom I proposed

or a retro-uterine or a retro-vaginal cyst, by a hematocele, by inflammation, retro-uterine pelvi-peritonitis, an abscess in the same region, a rectal tumour, or sometimes even a stercoraceous one, so as to prevent micturition, and may only be perceptible to the finger at the bottom of a narrow groove. Less frequently it is pushed *backwards*, usually by a fibro-myoma of the anterior wall, or an anterior sub-peritoneal tumour. Lastly, it may be pushed to *one side* by a tumour, a cyst of the ovary or broad ligament, or an inflammatory swelling of the same ligament. To sum up, this displacement, though of little consequence as regards the uterus itself, becomes a valuable sign of the development of one or other of the diseases just referred to.

Slight lateral displacements may sometimes be observed, depending on a congenital tendency, like those of which Cruveilhier¹ speaks, and which Freund² has shown by his researches must be attributed to the central, left lateral, or exceptionally to the right lateral position of the rectum, differences of situation which may cause lateral displacements of the uterus in an opposite direction.

I have also seen the uterus occupy a position anterior or posterior to its normal position in the pelvis, and which did not seem to depend on any peri-uterine malady, but on a congenital anomaly, especially on a relative shortness of one of the vaginal walls (for I have observed that this shortness coincided almost always with one or other of these antero-posterior displacements).

4. *Ascent of the Uterus*

The ascent of the uterus, which is more frequently met with in pregnancy than in a state of vacuity, may, according to Colombat,³ be determined by a number of causes, among others by a defect in the length and width of the uterine ligaments, by inflammation, engorgement and dropsy of the Fallopian tubes and ovaries, extra-uterine pregnancy, the first stage of anteversion and retroversion, and lastly, by the dilatation of the uterine cavity by hydatids and other foreign bodies.

Sometimes, as Goupil observes,⁴ there is in very rare cases congenital elevation of the uterus, depending probably on the shortness of the utero-lumbar ligaments, the abnormal length of the vagina, the height of the patient, or sometimes even on her *embonpoint*. In most cases, however, ascent of the uterus, like its horizontal displacements, is symptomatic of a disease in this organ or outside it. It may be caused by a hematocele, pelvic tumour, or some disease outside the organ. Contrary, however, to horizontal displacements, it is generally caused by the development of the uterus itself, or at least of its appen-

hysterotomy, refused to be operated on. The neck was firmly pressed against the pubis.

¹ *Anat. descript., Splanchnologie*, p. 471. Paris, 1865.

² *Die Lageentwicklung der Beckenorgane*, &c. Breslau, 1864.

³ *Traité complet des maladies des femmes*, t. i, p. 339. Paris, 1843.

⁴ Bernutz et Goupil, *Clinique médicale sur les maladies des femmes*, t. ii, p. 614. Paris, 1862.

dages. This ascent is sometimes the symptom of a purely physiological state, such as pregnancy. At other times it depends on the increased size of the uterus, due to various pathological conditions, such as a polypus, hypertrophy, a mole, and especially a fibrous body. In all these cases it is owing to its increased size that the uterus can no longer be contained in the pelvic cavity, and gradually rises above the brim. A large ovarian cyst, especially if there are adhesions between the ovary and the uterus, may drag the uterus up with it. Peritoneal adhesions occurring after delivery between the fundus of the uterus and the abdominal or pelvic walls may produce the same effect. Ascent of the uterus is often accompanied by elongation or dragging of the vagina, the effacement of its folds and disappearance of its *cul-de-sac*, with *elongation*, *atrophic wasting*, and finally, *laceration of the cervix*.¹

Ascent of the uterus as a symptom should also attract the attention of the physician, leading him to search for the cause of the displacement. It is evident that ascent of the womb causes, in its turn, distension and elongation of the vagina, sometimes disappearance of the vaginal portion of the cervix, increased size of the uterine cavities, or other symptoms varying with the cause which has determined the ascent.

Treatment can only be applied to the cause on which the displacement depends.

5. *Descent of the Uterus*

There are three degrees of prolapsus or descent of the uterus, the last of which goes by the name of *procidentia*. *The first degree* of prolapsus may extend to contact of the vaginal portion of the neck with the perinæal floor. *The second degree* is characterised by the presence of the cervix at the vulva. *The third degree* or *procidentia* supposes the uterus outside the vagina and vulva hanging down between the thighs.² This malady evidently offers great varieties as to degree, form and complications, several of which have lately been brought to light. Amongst the works which have contributed most to show the way in which uterine prolapsus is produced, and to distinguish it from the diseases which may simulate or complicate it, we may mention those of Boivin and Dugès,³ on the part which relaxation of the utero-sacral ligaments play, Huguier's⁴ paper on the hypertrophic elongation of the cervix, and Legendre's⁵ experiments on the phenomena which take place when traction is made on the uterus of a dead body so as to drag it downwards.

¹ Nunn, *Pathol. Transact.*, vol. x.—Barnes, op. cit., p. 678.

² Gosselin, *Cliniq. chirurg.*, t. ii, p. 534. Paris, 1873.—Barnes considers *prolapsus* as invagination of the uterus by the vagina; *procidentia* as complete inversion of the vagina or uterine hernia through the vagina.

³ Op. cit., i, 84.

⁴ Op. cit. Paris, 1859.

⁵ *De la chute de l'utérus*. Competition thesis, p. 104. Paris, 1860. See also Savage's work, *The Female Pelvic Organs*, Tab. xi, and *Transact. of the Obstet. Soc. of London*, vol. x, p. 235.

The observation of pathological facts shows that prolapsus may either affect the *whole uterus* or the *cervix only*, owing to the hypertrophic elongation of this segment of the uterus; *prolapsus of the cervix* (which is then the symptom of a disease quite different from real prolapsus of the womb) is incomplete when the hypertrophy only affects the vaginal portion, complete when both parts are affected.¹ On the other hand, prolapsus may be simple or complex: *simple* when the cervix occupies the summit of the vaginal invagination, when the uterus is in a normal state, and unaccompanied by any other organ in its displacement; *complex* when the neighbouring organs are diseased or displaced, or when the uterus itself presents an important physiological or pathological alteration. The chief complications depending on the neighbouring organs are: cystocele, stone in the bladder, rectocele, hæmorrhoidal tumours, even intestinal herniæ in more or less distant parts. The chief complications on the side of the uterus are: pregnancy, hypertrophy and elongation, engorgement, congestion, softening, inflammation, excoriations, ulcers, leucorrhœa, polypi, deviations, flexions and inversion.

Such are the elements which ought to serve as a basis for the various indications when it is a question of treatment. It is an important element in the success of this treatment, and in the diagnosis of the malady, to determine the anatomo-pathological alterations which prolapsus produces in the uterus and in the neighbouring parts.

In *prolapsus* the uterus is still contained in the pelvis, and the disease may be difficult to distinguish from simple hypertrophic elongation of the cervix or body; all the more so as there may be longitudinal hypertrophy of this organ without prolapsus.

In *procidencia*, the uterus being outside the pelvis, a vacuum is necessarily produced in the region which it occupied, and consequently a *cul-de-sac* presents itself above the displaced uterus containing the Fallopian tubes, ovaries and one or more knuckles of intestine; before and behind this organ are prolongations of the vesico-uterine and recto-uterine peritoneal *culs-de-sac*; the fundus of the bladder adhering to the cervix of the uterus is necessarily involved in its descent and forms, in the anterior part of the tumour, in front of the womb, below the urethral canal, a diverticulum or cavity accessory to the vesical cavity, which thus in many cases becomes bilobed, owing to the uterine fundus being on a level with the inferior outlet of the pelvis; the rectum may accompany the displacement of the womb behind, as the bladder does in front.

The surface of the tumour is nothing but the *vaginal mucous membrane inverted* by a kind of displacement similar to that which the intestinal mucous membrane sometimes undergoes, especially in the rectum, and which is designated *invagination*; this invagination offers degrees corresponding to those of the descent of the womb: it may begin at the upper part, and this usually happens when the uterine

¹ See *Ascent of the Uterus*, p. 355. This elongation may even occur without hypertrophy: see Sims, *op. cit.*, p. 353.

displacement is primarily owing to defective resistance of the suspensory ligaments; it may, however, also commence at the lower portion of the vagina, in which case it is produced independently of the uterine

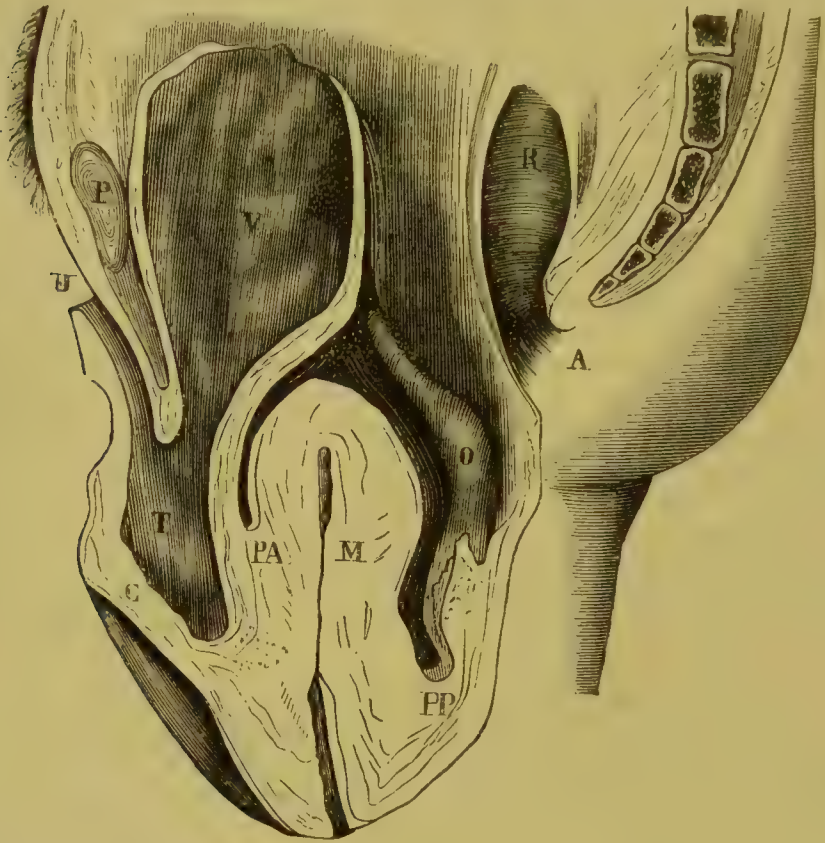


FIG. 252.—*Procidentia* with cystocele, two peritoneal *culs-de-sac*, an anterior and posterior, half natural size; preparation in St. George's Museum (after Barnes). This preparation is similar to that represented in Cruveilhier's *Anatomie pathologique*, 26^e livraison, pl. 4, fig. 2. M, womb; O, ovary; R, rectum; A, anus; P, pubis; V, bladder; U, urethra; G, cystocele; T, vesical trigone at the base of the bladder forming the cystocele; PA, anterior peritoneal *cul-de-sac*; PP, posterior peritoneal *cul-de-sac*.

prolapsus or concurrently with it, by the relaxation of the vaginal mucous membrane, the loosening of its adhesions to the neighbouring parts, and by defective resistance of the perinæal floor, &c.

When procidentia is complete invagination of the vaginal mucous membrane is so also, and this membrane becomes external, convex, distended by the organs, which are pushed down with it, and to which it forms a common envelope. The phenomena which occur in the accomplishment of this morbid act are therefore in some respects similar to those produced in cases of invagination or prolapse of the rectum.

Prolapsus of the vagina may take place without displacement of the uterus and other pelvic organs. It may be dependent, as West rightly remarks, on a kind of hypertrophy of this canal, which prevents it

from remaining within its own limits, pushing one of its folds out of the vulva. This hypertrophy occurs usually during pregnancy. The vagina, like the uterus, increases in length (which allows the uterus to rise above the pelvis) and in breadth (which allows the head of the foetus to escape), without speaking of its thickness. After delivery, if the retrograde evolution of the vagina is arrested in its progress, as sometimes happens with the uterus, and especially if the perinæum has been injured, whenever the patient attempts to walk or make any other exertion, the vagina will descend and project beyond the vulva.



FIG. 253.—Cystocele of the first degree of procidentia, complicated by hæmorrhoids (Sims).

Cystocele and *rectocele*, like vaginal invagination, not only often complicate prolapsus, but frequently precede it. The tumour acquires thereby greater size; the defective resistance of the perinæal floor, indicated by the premature appearance of these complications, is a condition unfavorable for treatment. The presence of peritoneal *culs de-sac* before and behind the uterus is still more so, and ought to be seriously taken into consideration in cases where excision of a part of the tumour or cauterisation of the vagina would seem to be indicated.

The *cervix uteri*, normal or altered by disease, is to be found in the centre of the tumour; sometimes contracted, at other times affected with a kind of eversion or ectropion, which exposes a portion of the cervical cavity externally, as if the invagination which had begun upon

the vaginal mucous membrane was gradually continued on the uterine walls, effecting eversion. In any case this ectropion is the end and not the commencement of prolapsus.¹

Usually the uterus becomes congested and hypertrophied, owing to its descent. This hypertrophy may either affect the whole organ or a portion of it only, most frequently the cervix, either in its infra-vaginal or supra-vaginal part. In this case the hypertrophy is the consequence of the prolapsus, whilst at other times it is the cause of it.

The suspensory ligaments are, perhaps, of all the organs of the uterine system those which undergo the most serious alterations. These utero-sacral and utero-lumbar ligaments, covered by the folds of Douglas, are sometimes torn, more frequently completely relaxed, the only vestiges of them remaining being a few folds stretched out in the form of a fan in the sacro-iliac cavity, which go into folds when the uterus is brought back into its normal position. The broad ligaments may become puckered, held back by bands of adhesion, suffering from the effects of displacement without having contributed to produce it. The round ligaments have still less share in displacement, neither undergoing any modification nor losing their ordinary flexuosity. The vulva is very much distended, the posterior commissure effaced, the perinæum very much thinned, and its rupture is the final act in producing prolapsus.² The descent of the uterus, therefore, does not depend on this organ itself, but on alterations in the organs which support it and maintain it in its position.

We may say of this, as of all displacements, that it is less a disease than a symptom—a symptom of disease or traumatism of the suspensory ligaments, a symptom of a pathological condition of the neighbouring organs, of the perinæum, vulval opening, &c. Therefore it usually only occurs in flabby women after numerous deliveries, or after laceration of the perinæum or accidental rupture of the utero-lumbar ligaments from a fall or violent effort. It is not uncommon to find in patients affected with hernia displacements of the same kind, attributable to the same troublesome tendency of the organism. I know a lady who suffers simultaneously from two inguinal herniæ, an umbilical hernia and a prolapsus uteri. Prolapsus, however, may occur in young girls,³ either from a congenital tendency, an original laxity of the ligaments, or from the effects of a sudden rupture of the utero-lumbar ligaments or the perinæum by a fall or a violent effort. De Graaf, Saviard, Mauriceau, Chopart and other writers have related cases of the kind.

Among the predisposing causes of prolapsus may be placed those general diseases which make their influence felt on the pelvic organs. Tuberculous women are subject to it. Beigel (op. cit., t. ii, p. 291)

¹ Scanzoni, op. cit., p. 128.—Jobert, *Union méd.*, 1858.—Le Gendre, op. cit., p. 64.—Boivin and Dugès, *Atlas*, pl. ix, fig. 8.

² Matthews Duncan, *On the Function of the Perinæum in Procidencia Uteri*.—*Edin. Med. Journal*, 1871, p. 673.

³ Churchill, *Diseases of Women*, p. 431. Dublin, 1864.—Monro, *Edin. Med. Essays*, iii, 282.—Nonat, op. cit., p. 444.

found sixty-four cases of it out of 140 tuberculous women, among others a lady, who having lost 20 lbs. in weight in a very short time by practising Banting, found herself one day without any cause a sufferer from prolapsus. It occurs also in women whose occupations oblige them to stand, make violent efforts, &c., *e.g.* washerwomen, workwomen and charwomen, singers, and, according to Klinge,¹ nuns suffer more frequently than others from prolapsus from prolonged standing and kneeling and from singing. A wide pelvis with amplitude and relaxation of the vagina dispose to prolapsus uteri, as also do tumours and increased weight of the uterus. These physiological or pathological conditions, however, are not sufficient to produce it. There must be *rupture or relaxation of the suspensory ligaments*. The resistance of these ligaments is what really prevents prolapsus, the resistance of the perinæum and the neighbouring parts is only a secondary obstacle to the final accomplishment of its descent. Relaxation of the utero-sacral ligaments being also the indispensable condition of retroversion, as we shall afterwards see, it follows that retroversion usually precedes prolapsus and is, so to say, the first stage of it. This has been remarked by several practitioners. West says that every prolapsed uterus is also more or less retroverted. According to Sims,² there must be retroversion before procidentia can take place, retroversion involving relaxation of all the ligaments; the existence of anteversion makes prolapsus impossible. According to Barnes also, the uterus cannot descend when anteverted. As soon as there is retroversion the relaxation of the suspensory ligaments and the weight of the intestines upon the anterior surface of the uterus tend to lower it and to increase the displacement. This fact cannot be too much insisted on. As another consequence, owing to the impossibility of restoring the resistance of the lumbar ligaments, it follows that it is impossible to effect a radical cure in a woman affected with procidentia, and from the possibility of restoring vaginal, vulval and perinæal resistance, or of supplying it artificially, the possibility of a palliative cure may be deduced.

We cannot hope to reach the causes which have produced the displacement; they have either ceased long ago, or their persistent nature defies almost all our means of action. They divide themselves into two classes, according to whether the disease has been produced suddenly or slowly. In the first case a fall, a violent effort, the act of raising a heavy weight, &c., has ruptured the utero-sacral ligaments, either from excess of the tension which the heavy uterus has exercised on them, or from the energy of the muscular contraction displayed, and has pushed the uterus outside the external organs of generation, as it may push the intestine outside the rings and produce a hernia. In the second case, the continued weight of the womb, the repetition of efforts produced by constipation or by any other action necessitating the bent position, continuous pressure exercised on the abdominal

¹ *Dissertatio de procidenti uteri usque pessariorum in hoc morbo*. Göttingen, 1867.

² *Op. cit.*, p. 295.

organs and tending to make the uterus descend (any action apparently slight, the slow and continuous persistence of which, however, greatly increases its importance), gradually relax the lumbar ligaments, deprive them of all elasticity, increase their length, and act in the same way on the perinæal resistance, producing irremediable displacement of the organ. The first mode is the cause of prolapsus in young women; the second is more frequently met with in old women.

The importance of the part which pregnancy plays may lead us to presume that the age when prolapsus occurs is most frequently that of sexual activity. Verdier¹ out of 156 cases counted 7 as occurring between the ages of sixteen and twenty, 21 between twenty-one and twenty-five, 38 between twenty-six and thirty, 32 between thirty-one and thirty-five, 25 between thirty-six and forty, 16 between forty-one and forty-five, 9 between forty-six and fifty, 9 between fifty-one and sixty-three. Beigel² met with 1 in a woman of ninety-two, which was produced at thirty; Monro³ observed 1 in a child of three; and Willaume⁴ 1 in a newly-born infant.

The experiments of Le Gendre⁵ and Bastien allow of our measuring approximately the amount of force necessary to produce procidentia and to destroy the resistance of the uterine ligaments. A force of from 45 lbs. to 50 lbs. is sufficient to force the cervix to the vulva. Experience proves that this result may be obtained by distension of the suspensory ligaments, without causing any permanent elongation and still less a rupture of these organs, as we see that the uterus when left to itself resumes its normal position and preserves it indefinitely after operations for vaginal fistula, excision of polypi and ablation of fibrous bodies, all of which necessitate drawing down of the uterus. By applying a force of 111 lbs. to traction exercised on the uterus, this organ is drawn through the vulva and prolapsus is produced. By slow traction the same result is obtained with less force. In this way moderate but continuous pressure produces the same result. Tumours, which sometimes raise the uterus out of the pelvis, pull it down, on the contrary, when the circumstances are reversed. Beigel observed a case of prolapsus caused by an increase in the size of the liver, another by the spleen. Dilatation of the bladder or rectum, or a stercoraceous tumour may do the same.—Tumours of the vulva may influence the vagina, causing invagination and subsequent prolapsus.

The relative frequency of prolapsus, which greatly exceeds that of all other displacements, is easily explained, for so many circumstances conspire to drag the uterus down: this organ is suspended in a large cavity by means of ligaments susceptible of extension; its weight and size may considerably increase under the influence of con-

¹ *Traité pratique des hernies, déplacements et maladies de la matrice.* Paris, 1840.

² *Op. cit.*, t. ii, p. 291.

³ *Edin. Medic. Essay*, vol. iii, p. 282.

⁴ Beigel, *op. cit.*, t. ii, p. 291.

⁵ *Op. cit.*, p. 104.

ditions which also diminish the resistance of the ligaments; one of these conditions occurs very frequently, viz. pregnancy; lastly, it is naturally pushed downwards by the weight of the viscera and by the contractions of the abdominal muscles. With such predispositions a relatively insignificant cause suffices to produce prolapsus.

Diagnosis—subjective signs.—When prolapsus is not produced suddenly, patients experience symptoms which attract their attention before the appearance of a tumour at the vulva: discomfort, weight, dragging in the loins, abdominal pains radiating sometimes into the groins, downward pressure on the perinæum, weight in the pelvic cavity, as if the contents were drawn outwards, occasionally vaginal tenesmus, frequent desire to micturate and go to stool, vesical and rectal tenesmus, pain at the points where the pelvic nerves are compressed, painful pressure of the uterus on the hymen in virgins, increase of all these symptoms at the menstrual period, nervous erethism, digestive troubles: such are the phenomena which strike the attention at first. When the tumour appears at the vulva the preceding symptoms persist, but are diminished when the patients are at rest, and especially when lying, and increased when they stand long, when they have to make violent efforts or lift weights. Patients experience a sensation which makes them fear that the womb or other organs contained in the pelvis are on the point of falling; it seems as if a part of themselves is drawn downwards. Cazalis and Le Gendre have drawn attention to a phenomenon that is very persistent, that is, vaginal tenesmus or that inclination to strain, to expel the tumour, which is caused by chronic congestion and by the vague dull pains felt in the bottom of the cavity, and which is also occasioned by hæmorrhoidal tumours; this tenesmus is probably not without influence on the descent of the vaginal mucous membrane. The tumour itself is not generally painful, and when it has lasted for some time the action of the air often renders it insensible; for the membrane covering it has exchanged the characteristics of a mucous membrane for those of skin, its epithelium has become an epidermis, which tolerates the contact of neighbouring parts.

Two general remarks may be made about these various symptoms. The first is that they are more marked when the prolapsus is not consecutive to a delivery or miscarriage, and especially when it has occurred suddenly. The second is that they are not always in proportion to the gravity of the displacement, but rather to the complications of the prolapsus and the nervous sensibility of the patient. In some women menstruation may be arrested or be irregular, whilst in others it may be increased, though this seldom happens; the tumour which is reducible in the intercalary period may become irreducible and undergo strangulation at the menstrual period, as in a case seen by Linas.¹ The congestion which is kept up in the uterus by its descent does not only determine pain in the organ, it also increases its weight and size, causing hypertrophy which tends to perpetuate the displacement; sometimes it even produces passive hæmorrhage and uterine leucor-

¹ Nonat, op. cit., p. 448.

rhœa, without counting possible disorders of the appendages.¹ Unless the tumour is irreducible, marital intercourse is quite possible, for the dorsal decubitus enables the patient to replace the uterus; there are cases in which intromission has taken place into the uterine orifice.² Therefore it is not rare to see women suffering from prolapsus become pregnant. In such cases the prolapsus should be reduced as soon as possible; sometimes reduction takes place spontaneously, and owing to the ascent of the uterus above the pelvic cavity after the third month, the patients are temporarily delivered from this infirmity.³ It is not indeed impossible for gestation to take place in complete procidentia, the patient being obliged to support the uterus between her thighs during pregnancy, till the time comes when the contractions of this organ are sufficient to accomplish delivery. Examples of this are given by Wagner, Chopart, Nonat,⁴ &c.

In a few cases pregnancy follows its normal course. When the uterus has not remained entirely outside the pelvis, prolapsus of the cervix and part of the body is likely to be reproduced at the moment of delivery and obliges the accoucheur to resort to version.⁵

A peculiar sensation of dragging at the umbilicus, vesical tenesmus and difficulty in micturition depend on repletion of the prolapsed bladder with the anterior vaginal wall, on the formation of the diverticulum of this organ as it is dragged into the cystocele, and on the deviation of the urethral canal, which in place of being directed towards the pubis, is directed downwards towards the bottom of the bladder, being dragged by the uterus; it follows that patients in order to empty the bladder have to strain in the bent position, which is so favorable to prolapsus, making violent efforts alike prejudicial to their condition and useless in securing micturition; and are often obliged to bend forwards and to compress the cystocele, in order to raise the vesical diverticulum and empty the bladder.⁶ The urine which, for reasons just indicated, cannot be expelled to any distance, runs over the tumour, irritating and ulcerating the vaginal mucous membrane so much as sometimes to produce gangrene and cause vesico-vaginal fistula.⁷ Sometimes there is retention necessitating the use of the catheter which is often attended with difficulty, and this is followed by

¹ Otto von Franke, *Der Vorfall der Gebärmutter in anatomischer und klinischer Beziehung*. Würzburg, 1860, S. 13.

² Hervey and Franke, *op. cit.*, p. 14.

³ Kiwisch, *Klinische Vorträge*, Bd. i, S. 159. Prague, 1854.

⁴ *Op. cit.*, p. 451.

⁵ See d'Erchia, *Il filiatre sebezio*, 1867.—Amussat, *Gazette méd. de Paris*, 1832, p. 588.—Husty, *Monatssch.*, Bd. xx, S. 248.—Gussecow, *Id.*, Bd. xxi, S. 99.—Needon, *Id.*, Bd. xxiii, S. 222.—Aubinais, *Gaz. des hôpitaux*, 1866, p. 378.—Fragé, *Gaz. méd. de Paris*, 2 Dec., 1866.—Sattler, *Zeitschrift für Wundärzte und Geburtshilfe*, 1872, No. 3.—Rubicki, *Virchow's Jahresbericht*, 1873, S. 660.—Burns, *Principles of Midwifery*. London, 1824, p. 130.

⁶ This mechanical irritation of the urethra, according to several surgeons, accounts for the presence, in these patients more frequently than in others, of fungous excrescences of the urethra, and small polypi in the meatus, which form an obstacle to micturition and add to the discomfort of the patient.

⁷ Scanzoni, *op. cit.*, p. 129.

incontinence of urine. One consequence of this accident is the decomposition of the urine, which becomes thick and viscous, and charged with phosphates. Another troublesome consequence is degeneration of the kidneys; the ureters, being stretched and compressed,¹ become dilated as well as the pelvis of the kidney, and in course of time the secreting substance of the kidneys atrophies (Kiwisch and Virchow). Another consequence of the retention of the urine in this diverticulum is the formation of vesical calculi, or their increase in cases where they existed before the cystocele (Ruysch, Ferras, Cruveilhier, Gosselin, Goupil, &c.). Lastly, the vesical mucous membrane may itself become the seat of a muco-purulent secretion and of a concretion of urinary deposits which produce, especially in its vaginal diverticulum, an accumulation of a more or less considerable number of vesical calculi.² Roper³ has met with several together which could be moved under the fingers.



FIG. 254.—Incomplete procidentia uteri, with hypertrophy of the vaginal portion of the cervix (after Sims).

With regard to the rectum, we find pains, tenesmus, difficult defecation, obstinate constipation, inflammation and ulceration of the mucous membrane owing to the contact with faecal matter,⁴ and in the case of rectocele, an accumulation in the intestinal diverticulum of

¹ Philippe (*British Med. Journal*, p. 128, 1870) describes two cases in which the ureters, compressed directly by the tumour, dilated and gave rise to uræmia, followed by fatal results.

² Blandin, quoted by Le Gendre, *op. cit.*, p. 76.

³ Barnes, *op. cit.*, p. 632.

⁴ Huguier, *Allongements hypertrophiques du col*.

fæces which the patients are obliged to force back with the tumour in order that they may escape by the anus.

Objective symptoms.—Direct examination by touch and sight suffice to make diagnosis easy. The first symptom is the presence of a tumour at or outside the vulva. This tumour, which is pear shaped, directed downwards and surrounded by folds of vaginal mucous membrane, keeps the labia apart; the surface is red or pink, dry, smooth, sometimes excoriated; the top, conical or slightly swollen, presents a transverse fissure, the *os uteri*, from which there is an exudation of mucus; the base seems sometimes pediculated by constriction of the vulval ring; in front of it may be seen the meatus; and behind it the perinæum forced back, projecting and diminished in its antero-posterior diameter; the anus itself may project, giving passage to a hernia of its mucous membrane.

This soft depressible tumour, mobile in every direction, and easily pushed back, gives a sensation of great resistance. It can be reduced completely, and is reproduced with great facility. In this double movement the reduction and invagination of the mucous membrane can be easily ascertained. When inversion of the vagina is not complete, a circular groove may be felt more or less marked above the tumour; this is the portion of the vaginal mucous membrane which has not been inverted, under which the characteristic hardness of the uterus may be perceived. Rectal touch allows the diagnosis to be completed by determining the position occupied by the uterine fundus

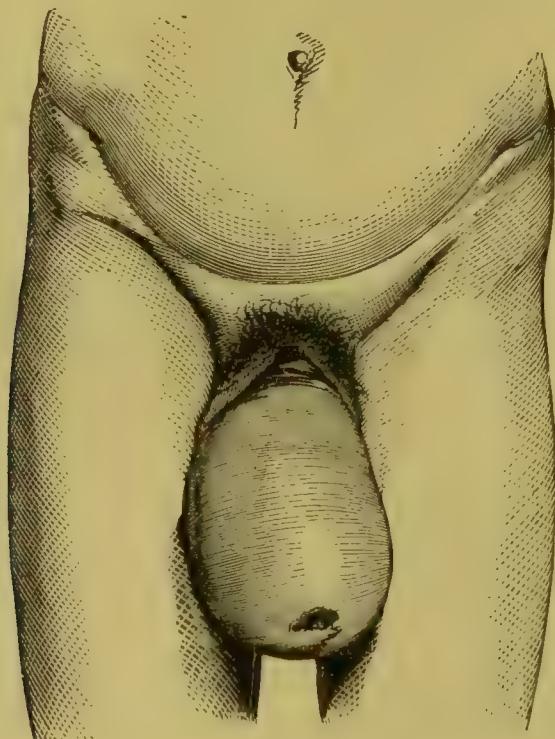


FIG. 255.—Complete *procidentia uteri* of twenty years' standing, in a woman of seventy years.

below the pelvic cavity ; whilst catheterism discloses the cystocele, and by associating it with rectal touch the information given by the latter as to the descent of the *fundus uteri* and its absence from the cavity is confirmed. The form of the tumour, resembling at first that of the neck, afterwards becomes conical, surrounded by folds at its base, and finally gets more and more globular and smooth in proportion as its size increases. Its volume may become very considerable, when in addition to prolapsus of the uterus there is also prolapsus of the vagina, bladder, rectum and small intestine, the latter known by its gurgling and filling the posterior peritoneal *cul-de-sac* ; an extreme case which is very rare, but which is possible, for I have seen a case of the kind : it may reach the size of the head of a fœtus and even of an adult. Defecation and micturition are considerably impeded, especially if the tumour is irreducible.

The colour of the vaginal mucous membrane with which the tumour is covered is also gradually altered by the congestion which makes it darker by exposure to the air, and by friction which imparts to it a greyish tint, and by irritation and inflammation which produce



FIG. 256.—Complete *procidentia uteri* with cystocele and rectocele, hypertrophy and ulceration of the cervix and eversion of the cervical mucous membrane (after Sims).

ulceration in the neighbourhood of the urethra and the most dependent portion of the tumour. Continued contact with the external air renders this membrane dry and discoloured, imparting to it the characteristics of skin¹ without, however, preventing it from regaining its pro-

¹ This is so true, that in an old negress affected for fifty years with complete procidentia this membrane became as black as the skin, and was even covered with down.

perties of mucous membrane should the tumour be retained for a time in the pelvic cavity ; but if the tumour increases in size and remains external, its mucous membrane and the adjacent tissues become congested, thickened, hypertrophied, whilst those parts exposed to friction present irregular ulcers in patches, from which a little pus is excreted and which sometimes become affected with gangrene. The uterine orifice, as well as the isthmus and cavity of the body, which are obliterated in aged women, are, on the contrary, sometimes dilated in young women ; I have already spoken of this peculiar dilatation and eversion which may extend to five centimetres in diameter,¹ and consequently be sufficient to admit the penis, examples of which eminent writers have given us. Palpation and percussion of the tumour may give the sensation of fluctuation in front. Pressure on the same point makes the urine escape from the meatus. Compression of the whole of the tumour, which is not painful in chronic prolapsus, diminishes the volume and communicates a sensation of internal resistance produced by a cylindrical organ larger above than below, terminating on a level with the upper and strangulated part of the tumour, and possessing all the characteristics of the uterus. It is not always easy to reach above the body ; but the neck is more easily perceived through the inverted vagina, because of its being harder, longer, more cylindrical than in a normal condition, especially in the numerous cases in which the displacement of the cervix depends on the elongation of the neck more than on the descent of the uterus. The presence of the intestines in the posterior peritoneal *cul-de-sac* is recognised by the peculiar gurgling sound heard when reduction is being made. Catheterisation shows the direction of the urethra towards the lowest part of the tumour, the existence and extent of the diverticulum of the bladder, and consequently the lowest limits of the cystocele, and lastly, the upper limit of the uterus in the centre of the tumour. By rectal touch we discover the rectocele, the position, deviations or curves of the uterus, and the elongation of the suspensory ligaments. Lastly, the use of the uterine sound allows us to determine in a still more precise manner the upper border of the uterus, the length of its vertical diameter, and consequently the absence or development of the longitudinal hypertrophy of the neck, and lastly, the various alterations in the direction of this organ. I do not understand the danger that Le Gendre apprehends from its use.²

Differential diagnosis.—The characteristics just enumerated hardly allow of our failing to recognise an infirmity so marked as uterine prolapsus ; it is not, however, so easy to distinguish simple from complicated cases, nor to determine the nature of the complications. Tumours arising from the cervix or even from the cavity of the body often project at the vulva, or outside, gradually dragging the uterus with them especially when they are large, and causing vaginal invagination to some extent, which is another cause of error. These fibrous, mucous, follicular polypi are difficult to distinguish from prolapsus by

¹ Huguier, *Allong. hypertrophique*.

² Op. cit., p. 68.

their external aspect, on account of the alterations affecting the vaginal mucous membrane when the prolapsus is of long standing. It might be thought that the existence of the *os uteri* allowing the sound to penetrate into the uterine cavity would be a sufficiently distinctive mark; it is not so, however, for the orifice may be obliterated or hidden, *e. g.* pushed forward by uterine retroversion (co-incident with prolapsus), which places the fundus of the uterus in the posterior peritoneal *cul-de-sac*, and its cervix in front against the pubis. In such cases catheterisation and rectal touch will help to show the absence of the uterus from the cavity, and to determine the existence of retroversion in the tumour. As for vulval or extra-vulval tumours, in the formation of which the uterus does not participate, such as cystocele, rectocele, cysts of the labia and vagina, catheterisation, rectal and vaginal touch suffice to determine which organ is displaced and whether the uterus occupies its normal position. There is, however, one malady which it is especially important to distinguish from *prolapsus uteri*, viz. uterine inversion. It must be remembered that uterine inversion does not necessarily involve propulsion of a tumour outside the vaginal cavity, and that when this is produced it is because prolapsus is added to inversion owing to the elongation or rupture of the utero-sacral ligaments. Now, inversion is almost



FIG. 257.—Complete procidentia uteri.

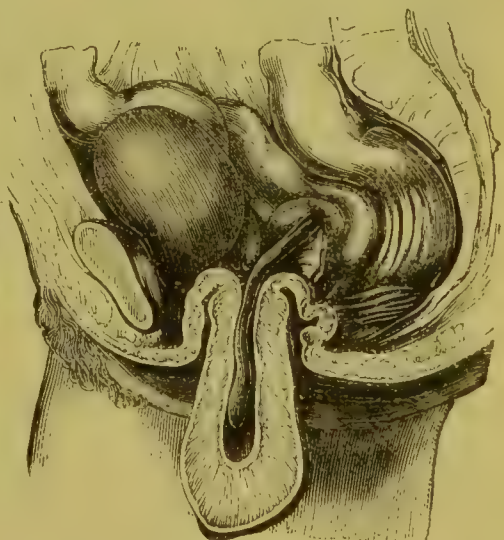


FIG. 258.—Complete inversion of the uterus complicated by vaginal invagination or uterine prolapsus.

always produced suddenly, from traction exercised on the adherent placenta, or from violent efforts accompanying the expulsion of the foetus, from a fibrous tumour or a polypus. The surface of the tumour has the spotted aspect of the congested uterine mucous membrane in place of the wrinkles of the vaginal mucous membrane; it often causes dangerous hæmorrhages; it is globular, broader below than at the vulva, where there is a strangulated pedicle; on a level with this pedicle the vaginal *culs-de-sac* and uterine lips may be seen,

the outline of which may be followed by the finger, whether the inversion has affected them and the neighbouring part of the vagina, or whether they have kept their normal position, surrounding the portion of the inverted neck with a kind of ring. This tumour shows no trace of an *os uteri*. Lastly, neither rectal nor vaginal touch, nor yet catheterisation, discloses the presence of the body of the uterus, supposing it has remained large enough and soft enough to be penetrable. Pregnancy is said to be a complication not unfrequently met with, especially when prolapsus is incomplete and the largest part of the organ is still contained in the cavity. The presumptive signs of pregnancy, especially the rapid development of the uterine tumour in a woman whose youth and health exclude the idea of any disease, and later on the signs of certainty, can leave no doubt as to the existence of this complication. It is evident that prolapsus even in the first degree is an obstacle to the regular progress of gestation. If the uterus cannot be reduced grave symptoms may arise, followed frequently by abortion or miscarriage. The dead fœtus has been seen to remain for some time in the prolapsed uterus before being expelled; in a few cases, to which I have already referred, pregnancy has terminated normally, delivery having been effected solely by the contraction of the organ. Catheterisation reveals the existence of vesical calculi.

Lastly, the hypertrophic elongation of the neck is beyond doubt the most frequent complication. Huguier regarded the majority of cases of prolapsus as simple inversion of the vagina gradually pushed towards the vulva, on a level with, or outside this orifice, by the progressive elongation of the hypertrophied neck of the uterus. I can, however, affirm that there are cases of simple longitudinal hypertrophy as well as of simple prolapsus and even procidentia without hypertrophy, besides a great number of cases of prolapsus complicated with more or less marked hypertrophy. It is easy to see that constant congestion of the prolapsed uterus at last causes hypertrophy, especially of the supra-vaginal portion of the cervix. This elongation of the neck was first observed by Morgagni;¹ afterwards described by Levret,² was called by Virchow *prolapsus of the uterus without procidentia of the fundus*,³ and was exhaustively studied by Huguier under the name of *hypertrophic elongations*.⁴ We may add that prolapsus must also be distinguished from hermaphroditism; in the 17th century a woman was taken for a hermaphrodite till Saviard⁵ announced that he had treated her for *prolapsus uteri*, which he had reduced. Valentin saw a similar case:⁶ a woman was taken for a hermaphrodite and accused of impotence; an examination showed the mistake, the uterus was reduced and capacity for conjugal intercourse admitted.

Treatment.—Uterine prolapsus hinders women from moving about

¹ *De Sedibus, &c., Epist.*, 45, art. 11.

² *Journal de méd. et de chir. de Roux*, vol. xl, p. 352.

³ *Verhandlungen der Gesellschaft für Geburtsh.* Berlin, Bd. ii, S. 205.

⁴ *Mémoires de l'Académie*, 1859.

⁵ *Nouveau recueil d'observations chirurgicales*.

⁶ Franque, *op. cit.*, p. 27.

freely, the least effort, especially that of lifting weights, bringing on lumbar and pelvic pain, which is all the more annoying from often being incurable. When I say incurable, I mean in an absolute manner; for there is no reason to despair of ameliorating the evil, or at least of palliating it. It is, however, alike impossible for art and nature to bring about a complete and lasting cure, especially when the prolapsus is chronic and has passed into the state of complete procidentia. Acute prolapsus is more easily cured: the ligaments which are relaxed are elastic like the tissue of the organ itself; we may therefore hope to see the supports of the womb recover a certain degree of their retractility, sufficiently so to retain the organ in a position somewhat similar to its normal one if we lose no time in applying suitable treatment.

The patient should observe the abdominal rather than the dorsal decubitus in order to help the uterus to ascend, and to shorten the distance between the neck and the promontory; when walking the uterus should if necessary be supported by a Hodge or some other kind of pessary, the bladder should be kept empty, and astringent applications (powdered tannin in a small pledget of cotton wool) should be made to the cervix. On the other hand, prolapsus when left to nature has a tendency to increase: the intestines fill the vacuum left by the uterus in the pelvis, preventing this organ from resuming its own place and continuing to push it down by the pressure which they exercise on it, whilst the prolapsus of the vagina is daily increased by the efforts of defecation. The presence of the uterus provokes expulsive efforts which increase the evil. I know that the possibility of spontaneous cure has been admitted by some. Scanzoni¹ thinks that peritonitis, which is sometimes developed after traumatism or delivery in a woman affected with prolapsus, may, by determining adhesions between the fundus of the uterus and some other portion of the visceral or parietal peritoneum, become the means of retaining the uterus in the pelvic cavity. In the same way cicatricial coarctations following suppurative vaginitis, by supporting the uterus from below and preventing its falling towards the vulva so as to invert the vagina, may bring about natural cures. These modes of cure, however, are very rare and not suitable for imitation by art. We must therefore content ourselves with a palliative cure which renders the infirmity supportable and prevents the displacement from being produced to its full extent, without hoping to modify the malady itself, the relaxation, rupture of the attachments, &c., which are the cause of the displacement. The measure of curability is furnished by the relation between the indications to which this lesion may give rise, and the imperfect means which we are able to employ in order to fulfil them.

The sources of *therapeutic indications* here as everywhere lie in the pathological elements the association of which constitutes prolapsus. The treatment necessarily varies with the case. In prolapsus two distinct pathological states must be admitted: simple prolapsus of a normal uterus, and descent of the vagina from a hypertrophied uterus.

¹ Op. cit., p. 130.

Sometimes weakening of the suspensory ligaments is the primary cause of the prolapsus; sometimes it is the weight of the womb increased by defective involution, congestion or hypertrophy. These two states are often combined, the one which has occurred first soon producing the other.

1. Let us first take *simple descent of the uterus*, without hypertrophy. The cause of the displacement is not in the womb: it exists in the abdomen above or below the uterus; above, tumours, dropsy, pressure, efforts, elongation or rupture of the suspensory ligaments, may push the womb downwards or let it fall; below, hypertrophy, tumours, prolapsus and relaxation of the vagina, laceration of the perinæum, may draw it in the same direction or withdraw from it all support. The indications are two: one easy, reduction; one difficult, retention. Reduction may take place simply, if there is no other obstacle than vaginal prolapsus, by taxis similar to what is employed in the reduction of herniæ. It may necessitate the destruction of obstacles opposed to its accomplishment, *e.g.* puncture in ascites and in ovarian cysts, the application of belts to support the abdomen, the ablation of vaginal tumours, &c. In order to maintain reduction the suspensory ligaments must be acted on, the distended ligaments shortened, the torn ligaments reunited, contractility restored to the paralysed muscular fibres, the last-named being only possible in the beginning. The impossibility of acting efficaciously by these means on the morbid elements to which they are addressed has led to the idea of maintaining reduction by giving tone to the vagina and supporting the perinæal wall by bandages or pads; by supplying the defective resistance of the vulval ring and vagina by intravaginal supports, pessaries, hystero-phores; by contracting the vaginal or vulval ring by excision, either circular, longitudinal or in folds (followed by adhesive or inodular cicatrisation), by cauterisation, by constriction and gangrene, by ligature, suture, or by any other means causing loss of substance. Lastly, by closing the vaginal orifice incompletely by infibulation, or completely by suture.

2. In cases of *prolapsi uteri with elongation* the hypertrophy may affect either the body, neck or isthmus, and be produced by the development of tumours, polypi, fibromata, or by various alterations of the cervix, by a hypertrophic inflammation, or oftener by mere hypertrophy. There are two indications: one or other may be fulfilled according to the case. The cause of the prolapsus may be removed by bringing the uterus back to its normal dimensions, *i.e.* by favouring absorption or by removing tumours developed on the surface or in the tissue itself by excision, crushing, cauterisation, ligature, &c., or the uterus may be reduced and maintained by efficient support without removing the cause of the descent. This palliative cure is often sufficient, the compression of the organ being tolerated by the habit which the pelvis has contracted of containing large bodies, especially if they are flexible.

3. In the association of these two principal varieties of prolapsus the one always plays the part of complication with regard to the other.

It is important to distinguish which of the two is the primary malady and which the secondary, even when the latter has acquired a major importance. The primitive element should be attacked first, and then the secondary, which has become permanent. These general indications being laid down, let us see how treatment should be practically carried out.

I. *Reduction*.—This is easy, and often spontaneous. In most patients the horizontal decubitus on the abdomen is sufficient to cause the entrance of the tumour, as is proved by the facility with which conception takes place in such cases. In a few patients the favorable tendency of the horizontal position is increased by the natural action of the vaginal walls (and probably also of the ligaments), which, in contracting from below upwards, raise the uterus so as to replace it in the pelvis. Scanzoni has proved this by projecting cold water on a prolapsus the size of the fist, which then entered the pelvis spontaneously. If reduction does not take place spontaneously owing to the increase of volume which constriction of the vulva determines in the recent or congested tumour, or if it is desirable to use some means of retention in cases where the uterus does not easily rise, *artificial reduction* must be made by performing a kind of taxis on the tumour similar to that used in reducing herniæ. 1. *The patient lying on her back* with the head and limbs flexed so as to prevent all abdominal pressure and the pelvis slightly raised, the tumour is grasped with both hands and compressed in such a manner that the various parts composing it rise successively into the cavity. The uterus may either be first pushed back, the reduction of the vaginal inversion taking place afterwards, or the vaginal wall near the vulva, as well as the rectocele and cystocele (when these complications exist), may be first replaced and the womb afterwards. 2. If difficulty is experienced in effecting reduction when the patient is in the dorsal decubitus, we take advantage of the fact that, as the essential causes of prolapsus are relaxation of the suspensory ligaments and retroversion, reduction will be facilitated by placing the uterus in anteversion, and by bringing the neck near to the sacro-lumbar ligaments. In fact, by placing *the patient in ventral pronation* on elbows and knees we are able to replace the uterus much more easily than in any other way, and to reduce the rectocele and cystocele at the same time. The weight of the abdominal viscera descending towards the umbilicus, the traction which they exercise on the womb, and the entrance of air into the vagina, are all favorable conditions for facilitating reduction.

Whether it be the neck or vagina which has escaped first in the commencement of prolapsus, there is no doubt it is the vagina which escapes first in long-standing procidentia. If after having replaced the parts in their normal position the patient is asked to make an effort to expel them anew, the anterior vaginal wall will be seen to descend against the perinæum in the form of a cystocele. A slight effort will push it beyond the vulva, and the neck will follow immediately, dragging with it the posterior wall of the vagina. In reducing procidentia we must therefore reverse this order: begin by replacing the posterior

cul-de-sac, then the neck; the anterior wall of the vagina and the bladder will follow naturally. The swelling which has occurred in the tumour owing to congestion, the development of inflammatory phenomena or constriction of the vulval ring, is not the only reason why reduction should be undertaken at once. A more important one still is pregnancy. Although in this latter case the irreducible uterus may be sufficiently supported by a suitable bandage to reach the term of gestation without accidents, and to expel a living fœtus from its cavity, yet it is prudent to attempt reduction before the size of the fœtus prevents the passage of the womb through the vulva and outlet. Mauriceau¹ once effected reduction at the fifth month.

The prognosis is not more unfavorable when reduction is difficult. Provided that it be possible, there is all the more chance that it will be maintained owing to the resistance of the vulva and perinæum. If, however, it be possible, the nature of the obstacles which hinder or retard it must be determined, in order to apply an appropriate treatment. In a few cases reduction is impossible. For example, a number of small fibroid tumours filling the pelvic cavity may prevent it (Sims). The adhesions of intestinal circumvolutions to the internal wall of the sac may be another cause. If there is merely congestion or œdema, the horizontal position of the patient, elevation of the tumour, applications of cold, astringents, styptics in various forms, suffice to facilitate reduction. If there is chronic inflammation, rest, the application of leeches to the cervix, emollient fomentations and the use of other antiphlogistic means, are usually successful in diminishing inflammatory tumefaction sufficiently to allow of reduction of the prolapsus. It is the same with the remarkable and frequent hypertrophic thickening of the vaginal walls: rest, the horizontal position, applications of glycerine, resolvent fomentations, may effect modifications favorable to reduction. Lastly, the parts must be gradually accustomed to resume a position which has become abnormal to them.

It must not be thought that ulcers and other alterations mentioned as being frequently developed on the vaginal mucous membrane in long-standing cases of prolapsus are contra-indications to reduction, and necessitate preliminary treatment as Scanzoni advises. As a rule, the mucous membrane is cured spontaneously when no longer exposed to the contact of air, of urine and to friction. Therefore it may be said that reduction is usually easy, whatever may be the obstacles; all that is wanted is a great deal of patience. Unfortunately, however, it is difficult to maintain the tumour reduced.

II. *Retention*.—Some means of retention are only used as palliatives, others aim at producing a radical cure. The former are all the more satisfactory because, without pretending to effect a radical cure, they sometimes contribute powerfully to it by enabling the ligaments to recover their elasticity and the uterine supports their resistance; whilst every day's experience proves that, in addition to the danger which accompanies the latter, they are quite insufficient to realise the

¹ *Observations sur la grossesse et l'accouchement*, Obs. 95, p. 78. Paris, 1728.

aim to which they pretend. Both, but especially the artificial means of retention, may be helped in their action by medical treatment. Sometimes this is the only treatment that can be used and we should always begin with it.

A. *General or medical treatment.*—This should be directed against chronic congestion, engorgement and all causes of increased weight of the uterus, as well as against debility, laxity of the ligaments, defective tone of the soft parts which support the uterus, and of the whole organism. Resolvents associated with restoratives, tonics, hydropathy, &c., constitute the principal agents of this treatment.

If the evil is due to a labour or miscarriage, to fatigue during a menstrual period followed by neglect at the following periods, then absolute rest, the horizontal position, laxatives, cold sitz-baths, astringent injections, vaginal applications of tannin or alum, local depletion if necessary, will often suffice to diminish the volume of the congested or hypertrophied uterus and gradually to dispose it to resume its normal position.

These means must be used for several months and be resorted to again and again. If the prolapsus depends on a sudden distension of the ligaments, and has been produced suddenly in a young woman, in fact, if it be recent and acute, the same means may suffice, especially if the genu-pectoral attitude is assumed.

Electricity and the cold douche exercise on the suspensory ligaments a local action, the association of which with general hydropathy and tonics produces excellent effects. If electricity is tried one of the poles should be applied to the cervix and the other to the groins and sacral region at the point of attachment of the utero-lumbar ligaments. If hydropathy is prescribed, general hydropathy should always be combined with the douche or spray on the loins, sides and groins and the treatment should be continued for a long time. When nothing better can be had cold sitz-baths may be prescribed for one minute at a time and repeated five or six times in the day. Although there is no certainty of a cure being obtained from this kind of treatment, it will be well to give it a fair trial and for a long time if there is no contra-indication. I have seen it produce excellent results. I am in the habit of seeing a lady for whom I prescribed this treatment more than twenty years ago for a prolapsus which made walking impossible and produced terrible attacks of hysteria; she continued the treatment for six months, and since that time she has had no serious hysterical symptoms, and she can walk as far and almost as easily as before she was ill. I ought to add that she could never bear a pessary.

These are really the only means that can produce in the tissues a natural modification capable of overcoming the cause of the descent. They ought always to be used, and sometimes exclusively, especially in cases of slight prolapsus that are recent and due to a uterine malady which is still curable.

B. *Palliative mechanical treatment* is indicated in cases of long-standing prolapsus, with rupture of the suspensory ligaments, laceration of the perinæum, cystocele, rectocele, &c. The mechanical means

of retention are very numerous, but in this apparent wealth we have only an additional proof of real poverty. I do not mean to say that any one of these means does not answer some special indication. But the contact of these foreign bodies with the mucous membrane, the embarrassment which their size causes in the cavity, the irritation, the pathological secretions and the other alterations of tissue to which their presence gives rise, the trouble which their introduction causes to patients, owing to the difficulty which they have in introducing them, the shocks felt by the neighbouring organs, the painful pressure which they necessitate on other parts, all go to prove a state of imperfection in these means which makes them intolerable to many patients. Therefore, as a rule, they should frequently be withdrawn from the vagina, not only for the sake of cleanliness but to rest the organ, and, when a tendency towards cure shows itself, which may occur when there is only relaxation without laceration, instruments of gradually decreasing size should be used till they can be dispensed with altogether. The pessary, by maintaining the organ in its natural place, allows the tissues in virtue of their natural elasticity to resume their normal size and resistance, in fact gradually to effect a cure. Therefore it is a mistake to say: A prolapsus is a hernia, and a pessary is a bandage which retains it. A pessary by maintaining the reduction places the uterus in a condition to recover, if that be possible, a contractility temporarily suspended.

The choice of the pessary ought to depend on whether the vulva and perinæum are intact and resistant or not.

a. When the vulva and perinæum are intact, when the contractility of the fibrous and muscular tissue of the vagina has not disappeared, the smallest foreign body with a surface sufficiently soft not to irritate the mucous membrane, and large enough to fill the space which separates the cervix in its normal position from the perinæum suffices to sustain the uterus in its normal position.

1. The simplest and often the best of all these pessaries is a fine sponge (*see* Fig. 154, p. 193), or if that cannot be had, a tampon saturated in an astringent or styptic solution;¹ the sponge should be carefully washed every day, and taken out for the night when the patient is in the horizontal position. *Spherical pessaries* are in their action somewhat like sponge; they press equally on all sides, but by dilating the vagina in every direction have the disadvantage of changing its form and of compressing important organs, especially the bladder and rectum.

By making *spherical pessaries elastic*, as Gariel has done (*see* Fig. 155, p. 193), they can more easily mould themselves to the vaginal cavity and multiply their *points d'appui* without provoking pain. They have been covered by a layer of amadou to make contact with the vagina less trying, and when resistance of the perinæum is defective, they may be kept in the vagina by means of a perinæal pad kept in place by a T bandage. With the view of avoiding painful

¹ In 1853, Fordyce Barker wrote a paper on the treatment of proclivitas by the use of tampons soaked in a solution of tannin, which is quoted by Sims.

pressure, bung-shaped pessaries have been invented which preserve the form of the vagina, and others like a *sandglass*, which, from the hollowing out of their central part, have no other *point d'appui* than the cervix on one side and the perinæum on the other; unfortunately the size of these instruments makes them intolerable.

2. The difficulty of maintaining these pessaries in the vagina even when the vulva offers a certain amount of resistance, and the importance of avoiding compression of the rectum and bladder have led to spherical pessaries being transformed into *discs* and *ovals* pierced in the centre to preserve the uterus from contact with them and to facilitate the evacuation of mucus; they have also been hollowed out in front and behind to avoid pressure on the rectum and bladder. Such has been the origin of the biscuit-shaped or figure-of-8 pessaries, which are introduced longitudinally and afterwards turned round in the vagina, so that their greatest diameter is transversal. Lastly, to avoid distension of the vagina as well as painful pressure on bladder and rectum in cases where the resistance of the perinæum is considerable, cup-shaped pessaries with a short stem have been invented, like those of Hervez de Chégoin, Simpson, &c., which support the cervix in their cavity, whilst their other extremity rests on the perinæum. Besides, however, necessitating the resistant perinæum, these retentive means are insufficient for a displacement like prolapsus.

3. The disadvantages of distension of the whole vagina when pushed beyond certain limits have led German gynecologists to try to support the uterus by distending the upper part of the vagina. This is the origin of the new pessaries incorrectly called *hysterophores*; these hysterophores, like pessaries, may be free or retained, may either have their two *points d'appui* on the vagina which they distend, or they may support the vagina by means of an external *point d'appui*. Kilian's *elytromochlion* was the first one invented. To make the introduction of the instrument easier, its position more fixed and the divergence of its extremities more constant, Zwank (of Hamburg) invented his hysterophore, composed of two wings with stems and furnished with a hinge in the centre, which allows of closing the wings in introducing the instrument, and when once it is in place of separating them to distend the vagina, keeping them in position by a screw. Schilling made the use of the instrument inconvenient by trying to regulate the divergence of the wings by means of a vice; but Eulenburg and Savage have improved it, the former by substituting an india-rubber ring, the latter, a tube of the same material for Zwank's screw (Figs. 170, 171, pp. 196, 197).

4. We cannot advise the use of any of these means excepting always a sponge, a tampon, and Gariel's pessary, which are useful in some cases, especially when associated with astringent applications; they all have the disadvantage of irritating the vaginal and uterine mucous membranes, and of taking up too much space or exercising painful pressure which is not compensated by the advantages they offer. This cannot be said of *Hodge's lever pessary*, which has been still further improved during the last few years. This is the best

pessary, both when the prolapsus is recent and the vagina has preserved its contractility (which is apt to be lost by the use of the



FIG. 259.—Hodge's aluminium pessary: *a*, anterior transverse branch, indented on a level with the urethra; *b*, transverse postero-superior rounded branch.

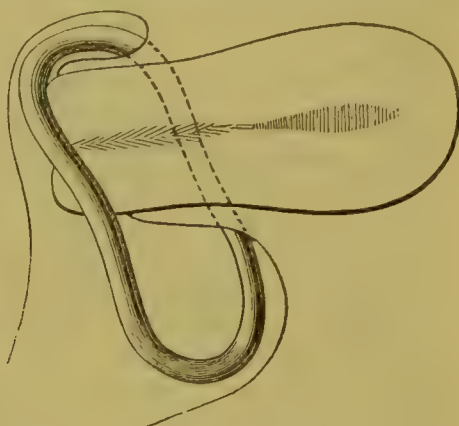


FIG. 260.—Hodge's pessary in place; its form is less sigmoid than in Fig. 259. Every time the inferior branch descends, at every inspiration, the upper one rises and raises the womb along with the posterior vaginal *cul-de-sac*.

previously named instruments owing to their excessive distension of the vagina), and when the vagina has lost this contractility, when the perinæum is weakened, and when we must try, by keeping the uterus in its place, to restore the contractility and resistance of these organs as well as of the suspensory ligaments. In the first place instead of distending the vagina and of being fixed in it, the instrument is mobile, rising and falling at every inspiration. It has the sigmoid form, and its size may be determined approximately by a measurement made with the finger. The length ought to be such that when the postero-superior limb is at the further end of the posterior vaginal *cul-de-sac*, without touching the uterus, the antero-inferior one is behind the symphysis, above the meatus. It is introduced by pushing the posterior limb first upwards then backwards, so that, guided by the finger, it reaches the posterior vaginal *cul-de-sac*, when the anterior limb should be raised and brought behind the pubis. When in place its action is as follows: during inspiration, when the intestines are pushed against the uterus and bladder and cause the anterior vaginal wall to descend, the antero-inferior limb of the pessary which rests on this wall, follows it in this movement and descends a little; the postero-superior limb necessarily rises in an opposite direction, raising the roof of the vagina and with it the uterus, the cervix being raised and directed backwards whilst the fundus is inclined forwards (if care has been taken to reduce it previously); now when the fundus is anteverted, it is impossible that it can fall. The action of the pessary is helped by the posterior wall of the vagina and the perinæum constituting a firm, thick, elastic tissue which, partly owing to its contractility, partly under the influence of

atmospheric pressure, is maintained in immediate contact with the anterior wall and prevents prolapsus. This pressure is exercised naturally on the upper limb of the pessary embraced by the vagina. The vulval sphincter by its contraction also assists in supporting the instrument. The patient ought to wear her pessary continuously; it is unnecessary to withdraw it at night, it does not prevent coitus, nor even conception and pregnancy, which occur frequently, although it is better to avoid marital intercourse while wearing it. Its lightness and its cleanliness, which is easily maintained by warm vaginal injections made twice a day with a weak solution of carbolic acid, exempt its use from all inconvenience. It only requires to be removed occasionally, to prevent accidents and allow of local examination. Therefore it is the first pessary that should be tried, especially when the prolapsus is recent, and when it is not accompanied by any lesion of the vagina or perinæum. When it fails we may have recourse to other kinds of pessaries which we are about to describe; but we must not expect more than a palliative cure from them, no more than from a truss.

b. When the vulva is enlarged, the perinæum thin or destitute of elasticity, and even the fourchette lacerated, the defective resistance of the perinæum must necessarily be supplied by a pad which replaces it, or by means which keep the uterus raised by supporting it either directly or indirectly.

1. *A simple perinæal pad* (Fig. 152, p. 192) furnished with straps fastened to a strong belt or pelvic corset may suffice to maintain the uterus in the pelvic cavity, thus converting the painful prolapsus into a descent that can be tolerated. The pad ought to be of wood, ivory, gutta percha or horsehair, and sufficiently thick; the straps of strong leather and cylindrical, kept in place behind and before by buckles placed as near the centre as possible; the belt, a piece of ticking lined with chamois leather with a padded metallic plate, resting above the pubis (Hull), or rather on the upper part of the sacrum (Ashburner), the firm and mild compression of which considerably relieves lumbar pain. I have seen these means succeed even in cases of hypertrophy of the cervix, the replacing of which could be effected without pain. By not distending the vagina it has the advantage of enabling it to recover its elasticity.

2. The inadequacy, however, of this means has suggested the idea of seeking externally for the *points d'appui* which are refused by the vulva and perinæum to *cup-shaped pessaries*, which seem the best fitted, especially when elastic, to support the uterus directly, without distending or pressing painfully on the parts situated in the neighbourhood or below it. This is the origin of all the *cup-and-ball pessaries* on which the cervix rests, including those of Bauhin,¹ Suret, Désormeaux and Amussat² (see Fig. 180, p. 199), as well as those of Bourjeaurd,

¹ Bauhin, *Appendix ad partum cæsareum Rosseti*, quoted by Sabatier, *Mémoires de l'Acad. de chir.*, t. iii, p. 374.

² Bourguery and Jacob, *Médecine opératoire*, t. ii, p. 319 and pl. 72. Paris, 1840.

Gabriel, Coxeter, &c., all of which are pierced with an opening in the centre for the discharge of fluids (*see* Fig. 181, p. 199), and attached to a belt by flexible supports, like those of Bourjeurd, or by rigid stems made mobile by the ductility of the metal or by the play of certain articulations of the stem which bears the cup destined to support the uterus, like those of Lazarewitch¹ and other makers.

3. Lastly, the difficulty of supporting the uterus directly and the drawback of the cervix resting (especially when it is diseased) upon a hard body which irritates it, ulcerates it, or makes it bleed, has suggested the idea of using indirect *points d'appui* which, by raising the vagina, maintain the uterus also in its place.

One of the simplest and most convenient instruments of this kind is Scanzoni's *pessary on a movable pivot*, the stem of which supports a polished sphere and has its *point d'appui* below on a T bandage by means of a ball-and-socket joint (*see* Fig. 183, p. 199). The instruments called *retained hystero-phores* are also of this kind. These are bent stems taking their *point d'appui* on the plate of a hypogastric belt, and terminating in a sphere, a ring or a plate sufficiently elastic and resistant to keep the anterior vaginal *cul-de-sac* raised without hurting it. Saviard's pessary and the hystero-phores of Roser, Scanzoni, Charrière and Becquerel are of this kind (*see* Fig. 182, p. 199).

c. *Surgical treatment or radical cure*.—This consists in modifications effected on the perinæum, vulva and vagina by various operations, with the object of exercising on the reduced uterus natural and permanent retention. These operations aim at closing or contracting the passages which allow the escape of the prolapsed uterus.

a. *Closing the vulval ring completely* may be tried in cases where the patient is aged, the uterus obliterated, &c. It may be effected by one of the means about to be described as used simply to contract it, or by the operation of Vidal de Cassis for obliteration of the vagina in cases of vesico-vaginal fistula. The vulva may be *incompletely* closed by the union of the labia, *i. e.* by infibulation. This operation was successfully performed by Schieffer in 1856 by means of a trocar and leaden thread. Klein² repeated it, passing two threads of lead and failed; the uterus escaping near the commissure, was hurt and strangulated by the thread. In 1859 Aran³ performed it four times; one case relapsed, another was followed by strangulation; the result of the two others is unknown.

b. *Contraction of the passages which afford escape to the prolapsus* may be effected: 1, on the vulva or on the vagina in the neighbourhood of the vulva; 2, on the vulva and perinæum; 3, on the vagina only.

1. Contraction of the vulva (*episioraphy*) is obtained by the dissection and suture of the three inferior quarters of the labia, an operation suggested by Mende and executed by Fricke, of Hamburg,⁴ in 1833.

¹ *Coup d'œil sur les changements de forme et de position de l'utérus et sur leur traitement*. Paris, 1862.

² *Deutsche Klinik*, 1856.

³ *Op. cit.*, p. 1047.

⁴ *Annalen der chirurgischen Abtheilungen des allgemein. Krankenhauses in Hamburg*, Bd. 2, S. 142. Göttingen, 1833.

Adhesion is not always complete ; disunion of the fragments below has been observed, and consequently the persistence of an opening against the fourchette. This accident is not exactly unfavorable, for it prevents the surfaces which have been brought together from being separated by hæmorrhage or suppuration, as has happened in other cases ; besides, the perinæal opening, though narrow enough to prevent the escape of the uterus, is sufficient for the menstrual discharge, and has been dilated enough to allow of the passage of the fœtus in labour, as in the case described by Platt.¹ Unfortunately the success of this operation is far from being certain. If it has succeeded once with Loscher and once with Knorre, it has failed once with Velpeau and Paget and four times with Scanzoni, once with Roux, and several times with Stoltz, the labia distending without rupturing till they allowed the tumour to escape anew. Therefore, although recommended by Dieffenbach, episioraphy was definitely condemned by Kilian. Perhaps it would have been successful if performed as Kuschler advised, deep suture associated with superficial suture, as in perineoraphy.—Contraction of the vulval portion of the vagina, *inferior elytroraphy*, performed by Malgaigne in 1837, did not succeed. Simon also failed in performing *elytro-episioraphy*, *i.e. juxtaposition* and *suture* after dissection of the vulva and lower portion of the vagina.

2. Contraction of the vulva and perinæum, *episio-perineoraphy*, consists in the greatest extent of juxtaposition by extending the incisions from the vulva to the perinæum, and in the increase of the depth and resistance of the cicatrix which contracts the vulva behind. The restoration of the perinæum, far superior to partial obliteration of the vulva, restores to the pelvic organs the support of which they had been deprived by an accident, and seems to constitute an essentially curative measure. The operation consists in removing a portion of tissue in the shape of a horse-shoe and uniting the two sides by a double set of sutures, consisting of three deep and three superficial stitches. Cases of relapse seem to have been exceptional and to have depended on the extreme smallness of the uterus ; there was no death. Breslau does not excise the dissected fragments, but turns them inside out, placing them in juxtaposition, like a spur or beak, in front of the perinæum, a method which gives more height to the plane of reunion. Hilton² and Oldham³ have added section of the anal sphincter to facilitate the autoplasty and to extend the perinæum. This operation, although inaugurated in France by Stoltz, of Strasburg, has been performed most frequently in Germany and England, and principally by Baker Brown,⁴ who performs similar operations for cystocele, rectocele, and rupture of the perinæum. In 1861 this surgeon had operated on forty-one patients by this method: the result was thirty-eight cures, improvement in two cases, one relapse. Unfortunately

¹ *Gazette médicale*, 1836, p. 16.

² *Guy's Hospital Reports*, 2nd series, vol. viii, 1854.

³ *Med. Times and Gazette*, 1857.

⁴ *On Surgical Diseases of Women*, 2nd edit., p. 96. London, 1861.—See also Savage, *Lancet*, vol. i, p. 164, 1858.

he does not say how long it is since his patients were operated on; and as firmness of the perinæum and existence of the hymen do not prevent uterine prolapsus, we may be certain that restoration of the perinæum does not suffice to cure it. Kückler, of Darmstadt, and Anger pursue a much surer method; the latter proceeds by dissecting off the mucous membrane of the labia and the neighbouring part of the vagina, and both carry the dissection and suture close to the urethral orifice. Anger has ascertained that cure was persistent eighteen months afterwards; this operation is therefore successful, but the escape of vaginal mucous is difficult and coitus impossible.

3. *Stricture of the vagina* has been produced by suppuration and by the formation of *retractile cicatricial tissue* (Hamilton)¹, in imitation of the traumatic cicatrices which obliterate or contract the vagina. This suppuration and consequent cicatrization are brought about by the simple *excision* of a zone of vaginal mucous membrane all round the tumour, as proposed by Romain Gérardin;² or by the excision of a piece of the vagina and uterus at the top of the tumour, as performed by Mayer, an excision which may necessitate the application of the actual cautery to arrest the hæmorrhage; or by the excision of several fragments round the neck (Cruveilhier), in imitation of Dupuytren's quadrangular excision of portions of tissue, to cure anal prolapsus. The formation of a cicatrix may also be procured by *cauterisation* with nitrate of silver (Cruveilhier), or acid nitrate of mercury (Laugier), the actual cautery (Velpéau), or sulphuric acid (Selnow); in all cases, however, cauterisation is either insufficient or dangerous. Therefore this means has never been tried for complete obliteration of the vagina as proposed by Gérardin. The *ligature* applied to one or several portions of the raised vaginal mucous membrane, as to the pedicle of a polypus, as proposed by Blasius,³ or the *wrinkled suture* proposed by Bellini under the name of *colpodesmorrhaphy*, are equivalent to suture after excision. Lastly, *pincement*, simple or by caustics, intended to provoke gangrene in several folds of the vaginal mucous membrane, which are retained between the teeth of strong *serre-fines*, has been proposed and practised by Desgranges, of Lyons. This surgeon has published several successes due to the application of this method. Nélaton has also had successful cases. The means is ingenious, but the operation frequently requires to be repeated, and is not without danger. This is the drawback of almost all the operations just described; they are liable to cause serious dangers in trying to cure an infirmity which is usually unattended with any, and to substitute a deformity admissible in old women, but which in the young may be the cause of pains and fresh dangers, from the

¹ *Cooper's Dictionary of Surgery.*

² *Arch. gén. de méd.*, viii, 132. Paris, 1824.

³ *Neue Operationsmethode beim Gebärmuttervorfall mittels kreisförmiger Ligaturen.* In a woman of twenty-four years Blasius applied four along the vagina, the first in the neighbourhood of the uterus, the second near the vulval orifice, the two others in the interval. It is needless to say that the result cannot be counted upon. *Preussische Vereinszeitung*, 1844, n. 41. *Schmidt's Jahrbücher*. Bd. 45, S. 52.

obstacle which it puts in the way of the accomplishment of the functions of the vulvo-uterine canal, especially that of delivery. These operations I think are only indicated when extreme relaxation of the vulva and vagina, cystocele or rectocele, occur not only as consecutive elements and secondary complications, but as principal elements and serious complications of prolapsus. If narrowing of the vagina is decidedly indicated, as alone able to prevent prolapsus, suture of this membranous canal on one or both of its walls is preferable to all these operations. This suture is known by the name of *elytroraphy* or *colporaphy*.

Elytroraphy or colporaphy is an operation which consists in dissecting off a band of mucous membrane from the anterior or posterior vaginal wall between two longitudinal incisions, and bringing together the edges of the wound with points of suture. Marshall Hall¹ invented this operation. Heming, quoted by Boivin and Dugès,² performed it successfully in 1831, Ireland³ modified it by making the incisions on the side of the tumour to avoid wounding the bladder. A. Bérard, who gave it its name, performed it several times unsuccessfully. Velpeau fixed the threads before finishing the incision and repeated the operation before and behind without more success. Scanzoni performed it thirteen times without success. Therefore, although Dieffenbach has modified the proceeding by removing two bands in place of only one oval one as formerly, and by repeating the operation several times in a different spot, if the tumour is reproduced, the majority of surgeons regard this method of treatment as useless, besides being attended with danger. Colporaphy, however, has been revived after undergoing several modifications ensuring for it more success in the future than it has had in the past.

a. Anterior elytroraphy.—Marion Sims⁴ in place of making the suture after having denuded a large oval surface of the anterior vaginal wall (as in his first attempts), has improved the operation by dissecting off the anterior wall a portion of mucous membrane in the form of a trowel (Fig. 261), so as to form a real fold, the upper ends of which (*c d*) are brought into contact and so directly support the neck of the uterus. In a case where the rest of the suture had failed, Emmet⁵ ascertained that the union of the surfaces (*c d*, Fig. 261) and the consequent narrowing of the vagina in the anterior *cul-de-sac* sufficed to maintain the uterus in place.

The performance of elytroraphy by this method is a delicate operation. The patient lies on her back or on the left side. Denudation and suture being usually performed on the anterior vaginal wall, the posterior wall and the perinæum are depressed by a Sims'

¹ He removed a band of mucous membrane the length of the vagina and 12 mm. in breadth, and united the edges of the wound by sutures; two years afterwards, in 1833, Vincent found the uterus and vagina in position.

² Translation of Heming's paper, 1834, p. 53.

³ *Gazette méd.*, 1832.

⁴ *Op. cit.*, p. 310.

⁵ *A Radical Operation for Procidentia Uteri*, *New York Medical Journal*, April, 1865.

speculum. I then fix in the anterior lip of the cervix the two terminal ends of a catheter, the convexity of which depresses the anterior vaginal wall towards the bladder; the curve of the catheter is



FIG. 261.—Elytroraphy as performed by Sims. *a, b, c, d*, bleeding surface in the form of a trowel; *f*, central part of the anterior vaginal wall, which will be enclosed by bringing the sides of the wound *a c, b d*, together; *e*, communication of the farther cavity *f* with the anterior utero-vaginal groove insufficient to allow the passage of the cervix. It will be seen that the meatus is below, the patient being in the genu-pectoral position.

buried under the lateral folds formed by the mucous membrane, and these folds indicate very exactly, where they meet in the median line, the spot where the mucous membrane ought to be dissected, so that these folds may be afterwards brought into contact. I then pass a solution of nitrate of silver over these folds and afterwards one of salt, which whitens them and allows me to mark out beforehand and very exactly the surface which has to be denuded; in order to trace the transverse line of denudation (*c d*) the cervix is drawn downwards. In tracing the branches of the **V** care must be taken to make them neither too divergent nor too close together. I then reproduce the cystocele, which makes denudation easier; a few points of suture may even be made before reducing anew. These sutures should be placed transversely, commencing from below, and the uterus should be pushed backwards with the sound till those nearest the cervix are passed. The sutures must embrace the whole of the denuded tissue (*c d*) to the exclusion of the undenuded portion (*e*), where it is important to leave a canal for the discharge of the mucous or purulent secretions which may accumulate in the bag (*f*). The cervix should be supported by the catheter till all the sutures have been closed and tightly fastened. The patient should be in the dorsal position and remain in

bed for several days or even weeks; it is well to use the catheter for some days and produce constipation by opiates. The lower sutures may be withdrawn at the end of eight or ten days, the upper ones in a fortnight.

b. Posterior colporaphy.—According to American surgeons, elytroraphy should most frequently be practised on the anterior vaginal wall, because cystocele usually complicates *procidentia uteri*. As, however, the artificial support to the uterus is of more consequence than the complications of cystocele or rectocele, we are not surprised that Simon, of Heidelberg (thinking it better to strengthen the posterior wall of the vagina in order to make it a support for the uterus and the anterior wall), should have substituted *posterior elytroraphy* or, to use his own expression, *posterior colporaphy*¹ for Sims's operation. By means of a broad fenestrated speculum which dilates the vagina he removes, with scissors or bistoury, a portion of the mucous membrane and subjacent tissue to within about an inch of the vaginal insertion of the neck. The upper extremity of the denuded surface ought not to be pointed, but almost square, so that after cicatrisation has taken

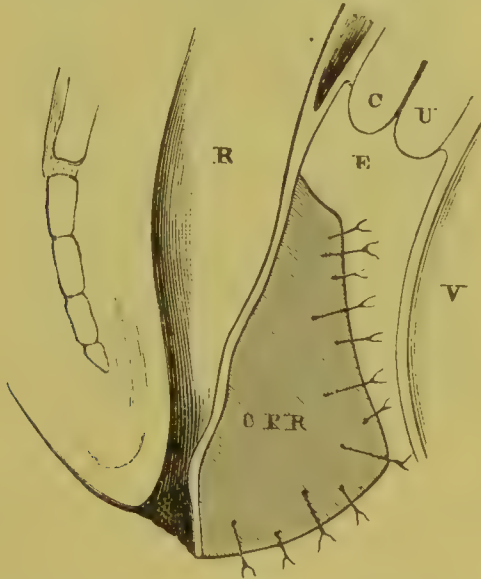


FIG. 262.—Colpo-perineoraphy of Simon and Hegar: c p r, juxtaposition of the right and left bleeding surfaces of the vagina and perinæum kept in contact by alternate long and short sutures, at the upper part a projecting fold of the vagina makes a supporting surface for the cervix; E, vagina; c u, vaginal portion of the cervix; v, bladder; R, rectum.

place there is a kind of bag above the cicatrix which receives and retains the cervix; a very practical precaution without which the cervix would penetrate into the narrowed canal, would insinuate itself into it like a wedge, and by gradually dilating it would eventually make its way through it and reproduce the prolapsus. Below, the posterior portion of the labia must be denuded, so that by uniting

¹ Hegar and Kaltenbach, *Die operative Gynaekologie mit Einschluss der gynaekologischen Untersuchungslehre*, S. 399, 401. Erlangen, 1874.

them there may be an elongated perinæum, prolonged forwards, forming a curve terminated by a spur which forms an extended *point d'appui*. The opposite borders of the wound are brought together by suture, and by the union of the two surfaces a firm and dense cicatricial band is obtained, which occupies almost the whole length of the posterior vaginal wall. The vagina is not only narrowed, it is also rigid and sufficiently thick to support its own weight and that of the uterus.¹

I may just mention lateral and bilateral *elytroraphy*, which may be suitable exceptionally to a specially broad vagina, and which have been tried by some operators. I should, however, always prefer colpoperineoraphy or Lefort's operation, or, as a last resource, occlusion of the vagina.

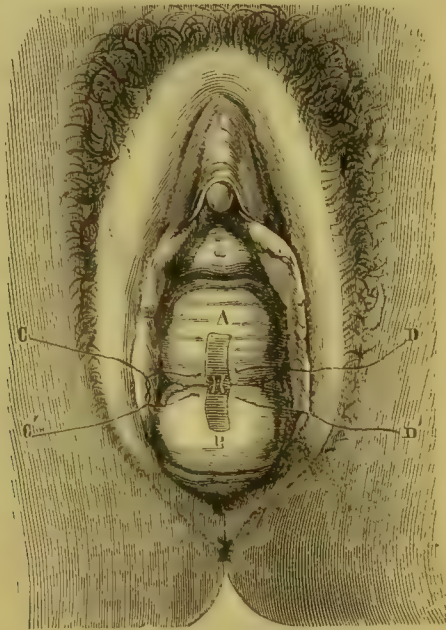


FIG. 263.

c. Median colporaphy of the vagina has recently been performed by Léon Lefort.² The uterus being outside the vulva, a portion of mucous membrane is dissected off each of the vaginal walls from their middle part, about six centimetres long and two wide. The uterus is reduced sufficiently to bring into contact the uterine extremities of these two denuded surfaces, and three sutures are applied to this transverse border, uniting the anterior and posterior vaginal walls in a linear direction. The union of the lateral borders is effected afterwards by passing a metallic thread on each side, first through the border of the anterior denuded surface, and then through the corresponding border of the posterior surface; a thread being placed in the same way on

¹ The *Kolpoperineoplasty* of Bischoff, of Bâle, described by Banga (Bâle, 1875), is very similar to this. It has the advantage not only of narrowing the vagina behind, but of curving it, changing its direction by bringing the axis forwards. Hegar's *Colpoperineoraphy* (op. cit., p. 407, *et seq.*) is a modification of Simon's.

² *Bulletin général de thérapeutique*, t. xcii, p. 337, 1877.

the opposite border and at the same height, it suffices to fasten these two sutures, in order to increase the reduction of the uterus by bringing the opposite vaginal walls together. This reduction is finished in proportion as the sutures are fixed, and when the two borders of the denuded surfaces have been united in their whole length reduction is complete. The threads that have served for suture of the transverse border nearest the uterus being hidden in the upper part of the vagina, are not easily accessible when union is effected some days afterwards; therefore they should be left long, so that they can be easily seized when they have become free. In his first case Lefort completed his operation by *perineoraphy*, which seemed to him necessitated by the relaxation of the vulva. Median colporaphy has the advantage of not preventing coitus, while placing in the vagina an obstacle which, from its position, ought to prevent a return of the prolapsus better than any other operation.

d. Obliteration of the vagina.—Obliteration of the upper part of the vagina is the only means of preventing the recurrence of prolapsus in an old woman. We must not, however, ignore the accompanying evils: that marital intercourse is absolutely prevented, and that the cervix is enclosed behind a transverse partition of the vagina, where it is soon surrounded by an accumulation of mucus and pus, which macerates the epithelium and causes ulceration and degeneration.

e. As for amputation of the cervix, by which Huguier has proposed to treat prolapsus in cases of hypertrophic elongation of the neck, I shall refer to it when we come to hypertrophy of the uterus.

I have performed all these operations with a relative success, which enables me to recommend them. I speak of colporaphy and perineoraphy. In eight patients I have tried to narrow the vagina by suture; this narrowing in three cases was effected on the anterior vaginal wall, in five others on the posterior wall and the perinæum. All these patients were able to resume the exercise and occupations which they had been forced to abandon. Four of them did not require to use any instruments; the four others, including those operated on by anterior elytroraphy, had to continue the use of a belt with perinæal pad to support the uterus; this organ did not seem to have any tendency to escape, but the belt and pad greatly facilitated exercise. I have not yet had occasion to try Lefort's method, but I should not hesitate to do so, adding perineoraphy to his median colporaphy, if the gravity of the evil involved the necessity of giving more strength and resistance, by an increase of thickness, to the support of the uterus. Posterior colporaphy seems to me theoretically preferable, and my practice has justified this theory; I should therefore advise it when there is reason for attempting a radical cure of these maladies. If the cystocele has not yielded to this operation, anterior colporaphy may be added. If hypertrophic elongation of the cervix complicates prolapsus, amputation of the cervix must be performed. But even when justified in performing these three operations on the same patient, as Tracy of Melbourne did, we must beware of doing so at one sitting as he did; a considerable interval

should, on the contrary, be placed between them. I do not speak of perineoraphy, which is evidently included in posterior colporaphy in Simon's operation.

Before undertaking any of these operations the patient should for some time previously assume the decubitus which is most favorable to reduction; it is wonderful what amelioration is obtained by this simple means, which greatly lessens the gravity of the operations that have to be performed.

DEVIATIONS

Deviations are changes in the direction of the uterus, or in the relations of its longitudinal axis with the brim, the pelvic cavity, and the viscera contained in it. When this change is slight it takes the name of *inclination*, and of *obliquity* when lateral; when more marked that of *deviation*, and when still more marked that of *version*.

These three expressions designate the various phases through which the uterus passes before reaching the last degree of deviation. At first slightly inclined in one direction the axis of the uterus deviates more and more from its normal direction, till the organ is completely turned upon one of its surfaces or sides, affecting a horizontal direction, and with its fundus looking forwards or backwards, to the right or to the left, sometimes even looking downwards as well as backwards, whence the name of *version* (*vertere*).

The deviations receive their special names from the side of the cavity towards which the fundus is directed, the cervix always taking the opposite direction. If the fundus inclines forwards and downwards the cervix looks backwards and upwards; if it inclines backwards the cervix looks forwards. That is because in deviations the change of the uterus does not affect the absolute position of the organ, not being a real displacement; the suspensory ring is not displaced. We must, however, admit that it is frequently otherwise, in which case descent or ascent are combined with deviation. When the uterus is retroverted it is almost always at the same time prolapsed; when anteverted it is often elevated. Sometimes also the tissue of the uterus is altered as well as the ligaments, and retroversion is accompanied by retroflexion and prolapsus, and in the same way anteversion is accompanied by anteflexion and elevation. Flexions of the uterus may, therefore, coincide with deviations, but Marion Sims goes too far in regarding them as different degrees of the same condition. The pathological alteration of the ligaments is the real cause of persistent deviations; the pathological alteration of the tissue of the uterus is the sole cause of flexions. With regard to the latter, I will try to explain why in certain circumstances they should occur simultaneously.

There are four principal deviations: *anteversion*, *retroversion*, and *lateral versions*, *right* and *left*. It is evident that between these cardinal directions there may be intermediate deviations, designated by

the names of *ante-lateroversion* or *retro-lateroversion*. They are, however, of secondary importance. Anteversion and retroversion are much



FIG. 264.—Right unicorn uterus, with absence of the horn and the left appendages, simulating a dextroversion or dextroflexion. U, uterus; CU, cervix uteri; O, ovary; T, Fallopian tube.

the most common and the most marked. Lateroversions are limited by the broad ligament, in which the organ is too deeply inserted to be able to deviate considerably in either direction. A great many mistakes have been made with regard to lateroversions owing to the difficulty of diagnosis.

Anteversion and *retroversion* are the names given to inclinations forwards or backwards beyond certain limits. When once produced they may be carried a great length, especially retroversion. If the fundus is inclined forwards or backwards twenty-five or thirty degrees it is not in a bad position; but if it goes to forty degrees without soon returning to its normal position the deviation is naturally increased till it becomes persistent. At forty-five degrees its anterior or posterior surface is exposed to pressure from the viscera, and consequently it will become increasingly deviated. Anteversion is necessarily arrested at ninety degrees, the uterus then resting on the anterior wall of the vagina and bladder. Retroversion encountering no obstacles may reach 135 degrees,¹ when the symptoms become more marked, such as dragging at the umbilicus and groins, sacral pain, weight at the anus, nausea, dyspepsia, &c.; reduction at the same time becomes more difficult, owing to the uterus becoming enclosed by the surrounding organs.

¹ Sims, op. cit., p. 256.

*Anteversion*¹ is very common. It is only an exaggeration of the *normal inclination* of the uterus during foetal life and during pregnancy. At an early period of gestation the inclination forwards and to the right becomes more marked, and sometimes exceeds the normal limits, necessitating the use of an external support. It is very common in the virgin and nullipara. A persistence of the foetal condition is enough to produce it, or this state may be aggravated by dysmenorrhœa or by the increased weight of the fundus of the organ, or by a cicatricial contraction following inflammation of Douglas's ligaments, which gives an essentially *pathological* character to anteversion. It may also be due to abnormal development of the anterior wall, to the presence of a fibroid in this wall, provided that the tumour

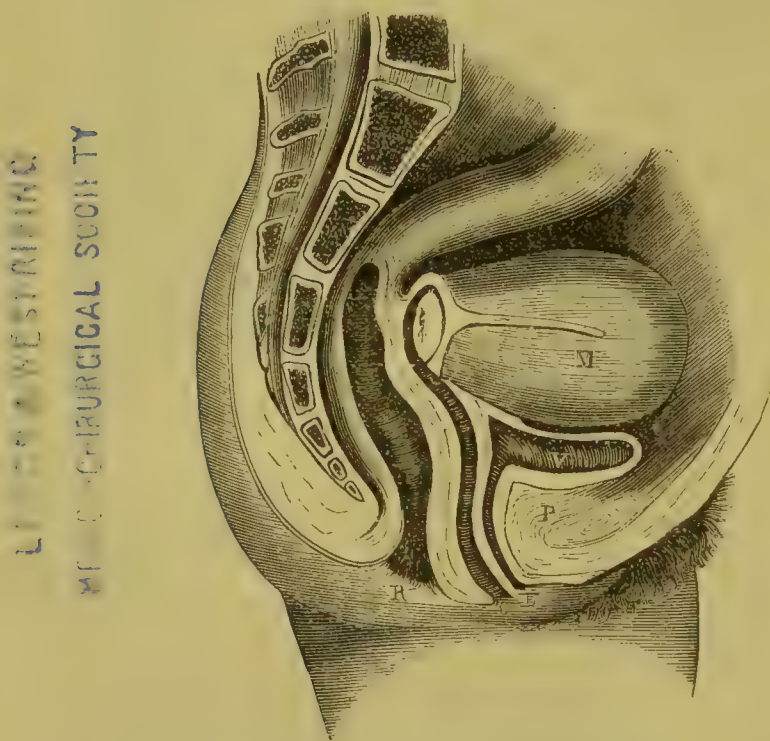


FIG. 265.—Anteversion in the first month of pregnancy: M, uterus; C, vagina, vulval orifice; U, meatus; V, bladder, compressed by the body of the uterus; R, rectum; P, pubis.

has its seat in the body (for if it is developed in the cervix it may, on the contrary, produce retroversion). Nevertheless, I do not agree with West, that it is chiefly the weight of the organ which determines anteversion; the *utero-sacral ligaments* must be *shortened*. The fundus of the organ compresses and pushes the bladder before it and rests against the pubic symphysis, sometimes even lying behind it. The neck, on the contrary, rises behind into the concavity of the sacrum, pushing back the posterior wall of the vagina and the anterior surface

¹ Anteversion attracted attention before retroversion; it was described exactly by Levret.

of the rectum, which it depresses so as to hollow out a kind of resting place for itself. The uterus may be kept firmly in this vicious position by the shortening of the supra-pubic ligaments, especially of the utero-sacral ligaments which, by raising the neck behind, make the fundus descend in front. What Schultze has said of ante flexion may be applied to anteversion, leading us to distinguish natural congenital anteversion from pathological anteversion caused by posterior perimetritis with adhesions, cicatricial and retractile alterations of Douglas's ligaments, and necessarily requiring a totally different treatment.

Retroversion is always *pathological*. It is more uncommon than anteversion, because contrary to the normal inclination of the uterus; it is also more serious. It is common in the multipara and in the aged. Retroversion, although contrary to the normal inclination of the uterus, is very easily produced in certain circumstances; the posterior wall of the uterus being naturally thicker than the anterior, all congestion or hypertrophy of this wall with *relaxation of the suspensory ligaments* disposes the womb to become retroverted; a tumour or any increase in the weight of the fundus or posterior wall has a great influence, the form of the pelvis, the cavity of the sacrum, the presence of Douglas's peritoneal *cul-de-sac*, helping the displacement

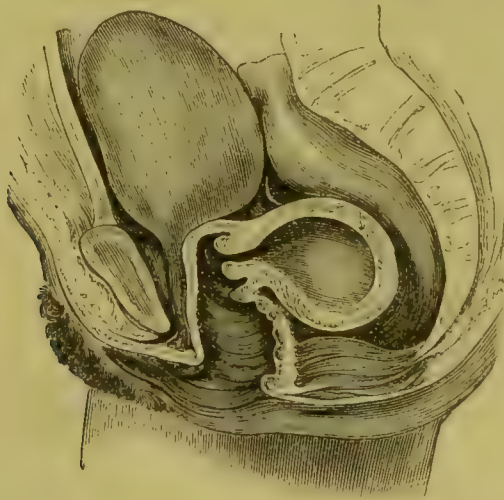


FIG. 266.—Retroversion of the uterus.

of the organ in this direction. It may occur suddenly as the result of an accident or violent effort, not only during pregnancy (as occurs most frequently) but also during a state of vacuity with or without hypertrophy; generally it comes slowly owing to gradual relaxation of the ligaments; it may date from a delivery, miscarriage, or metrorrhagia, it is increased at every menstrual period as well as by constipation and the accumulation of urine, and it becomes incurable by the formation of utero-intestinal and pelvic adhesions, succeeding attacks of circumscribed peritonitis. It may be slight or well-marked but, once produced, it goes on increasing; sometimes the fundus rests on the sacro-vertebral angle, sometimes it falls below this angle into

the concavity of the sacrum, and so low that it rests not only on this bone but on the perinæum below Douglas's folds, exercising so much pressure on the anterior surface of the rectum that a serious obstacle is placed in the way of the evacuation of the fæces or the entrance of an enema. The cervix, although unable to rise towards the symphysis of the pubis, is nevertheless, owing to the extreme declivity of the fundus and the elongation of the ligaments which allows it to get further and further away from its points of attachment to the promontory, sometimes on the same level as the fundus, sometimes higher than the fundus itself, the weight of which forces the cervix to swing forwards and to push before it the neck or fundus of the bladder; the supra-pubic and utero-sacral ligaments must be considerably relaxed, softened and elongated before this deviation can occur, therefore it usually precedes prolapsus. The cervix, though it appears to rise, never does so (except in gestation), but the whole organ descends and the fundus more so than the neck; the vesical adhesions persisting alone, seem to be the cause of the cervix being dragged forwards and upwards; the anterior wall of the vagina is often shortened in long-standing retroversions; it has even seemed to me that sometimes a congenital shortness has not been without influence in the production of retroversion. The weight of the fundus¹ and the pressure of the abdominal viscera suffice to produce and keep up this deviation, in which the ligaments play a passive part (which is not the less the principal, owing to the absence of all support for the organ in consequence of their relaxation), just the contrary to anteversion, in which, by their retraction, they take quite an active part. Lastly, hypertrophy of the lowest part of the uterus is often observed as a consequence of retroversion; in anteversion we have seen it play the part of cause. Pregnancy is a serious complication requiring prompt reduction.

Lateroversions of extreme degree are rare, though slight cases are common enough, especially to the right. The fundus may incline to either side so far that the corresponding angle may touch the pelvic wall, whilst the neck, rising on the opposite side, touches the corresponding surface of the cavity. According to Aran² the broad ligament corresponding to the inclination is frequently shortened, the utero-sacral ligament of the same side atrophied or relaxed, the utero-sacral of the opposite side stretched and shortened; of the two supra-pubic ligaments the one corresponding to the inclination is relaxed or shortened; the other is stretched or elongated. Some autopsies have enabled me to verify the reality of these alterations.

Diagnosis.—When we find that a considerable number of deviations date from intra-uterine life, and therefore ought to be all the more easily supported; that the uterine cavities present neither devia-

¹ The development of a tumour in the posterior wall of the body of the organ may produce retroversion, whilst its development in the cervix behind may produce real anteversion by pushing the body forwards, according to nMario Sims, phenomena which are the reverse of those I have indicated for anteversion.

² Op. cit., p. 1022.

tion nor compression ; lastly, that when they are produced in a wide pelvis and consequently cause no functional disturbance in neighbouring organs, they may continue for a long time without giving any sign of existence ; we need not be surprised that after having attached too much importance to versions, a reaction has set in tending to ignore this part of uterine pathology too completely.

But whilst causing little pain by themselves in some circumstances, versions are still very painful affections to delicate women owing to the reaction exercised on neighbouring organs when, for example, they disturb the pathological evolution of some degeneration of the tissue, of inflammation of the peritoneum, of the broad ligaments, &c. It is the contrary with prolapsus and flexions (especially retroflexion), which are painful in themselves. This is easily recognised when we have to do with a compound deviation, especially with retroflexion combined with retroversion and prolapsus, the most frequent perhaps and the most painful ; when the retroflexion and prolapsus are cured, the pain is alleviated, and although a considerable amount of retroversion and prolapsus may continue the patients no longer complain of pain.

Therefore when serious symptoms are produced by deviations the deviations must not only be very marked, but must occur in exceptional conditions, in impressionable women, or in a narrow pelvis, or on a tumefied uterus surrounded by diseased organs. There must also be uterine or peri-uterine inflammation, congestion, hypertrophic induration, or some other morbid alteration of the uterus, its appendages, its ligaments, its peritoneal covering, or of neighbouring organs. I do not mean that in such cases the deviation plays no part. On the contrary, I think that it contributes to increase the symptoms and to keep up the morbid state which is alternately cause and effect, a very important consideration both with regard to diagnosis and treatment. I believe that deviation (supposing that it did not exist from the beginning) when once produced is frequently accompanied by uterine suffering which did not exist before, especially when carried to such an extent that the relations of neighbourhood are completely altered, and that the neighbouring organs cannot come into contact in these new relations without giving pain. I have often seen the pain disappear as if by enchantment after reduction. I presume, therefore, that in the majority of cases the symptoms are due at once to excessive displacement and to some complication. I presume that an ordinary deviation occurring gradually, as frequently happens, and free from complication, does not usually determine any serious functional disturbance. Lastly, I am certain that, when carried to the highest degree, it is betrayed by pathognomonic signs (which are still more marked in cases of flexion) which, apart from direct examination, enable us to diagnose the direction and the degree of the version. This remark is especially applicable to retroversion.

Subjective signs.—The common symptoms are general symptoms, especially disorders of digestion, innervation and nutrition, which are common to a great many uterine maladies, and local symptoms, such as a feeling of weight, of dull pain or dragging in the pelvis, in the

loins, in the abdomen, groins and perinæum, increased by standing, walking, fatigue, constipation, retention of urine, &c. The local symptoms appear to depend less on the sensitiveness of the uterus or on the action exercised by this deviated organ on its ligaments, than on the pressure or painful traction which the abnormal position of the womb and the change of its relations exercise on the neighbouring organs, especially on the bladder and rectum. Disorders of the urinary excretion and of defecation are the most common of all the probable symptoms of uterine deviation. Sterility and the existence of more or less persistent uterine leucorrhœa may also be placed among the number of the symptoms which are produced in cases of deviation, but which cannot be taken as proof of their existence rather than of that of any other morbid state.

As for the *special symptoms* distinctive of the various kinds of deviation, it is impossible to say that retention or incontinence of urine is specially connected with anteversion and constipation with retroversion. I have never observed anything especially distinctive with regard to this: frequent desire for micturition, owing to the pressure which the weight of the uterus exercises on the bladder, is certainly a symptom of anteversion; difficulty in micturition and tenesmus, in consequence of compression of the uterine cervix against the neck of the bladder and the urethra, are also sure signs of retroversion. Nevertheless, as the uterus frequently preserves its obliquity (fundus to the right) in retroversion, the urethra escapes the pressure exercised on it by the cervix being forced against the pubis. What is more certain is that, in the majority of patients, the symptoms which appear to be due to anteversion are alleviated by the dorsal decubitus, whilst in patients suffering from retroversion the dorsal decubitus even in the best conditions, with a perfectly horizontal posture, flexion of the limbs and general relaxation of the muscles, is usually powerless to dissipate pain. In some patients even the pain is increased by this posture, so much so as to oblige them to turn on one side, and finally on the abdomen. Another symptom which I have observed in retroversion is a sensation of dragging at the umbilicus, extending from this point to the pelvis, and aggravated by the dorsal decubitus. In retroversion the pressure exercised on the hypogastrium (when the patient is standing) from below upwards and from before backwards, either temporarily by the hand or in a permanent manner by a hypogastric belt, excites pain in place of alleviating it; the contrary occurs in anteversion. Lastly, in retroversion sterility is much more common than in anteversion, owing to the mechanical difficulty placed in the way of the entrance of the semen.

In lateral versions I have observed nervous symptoms, neuralgic darting pains in the limbs, seemingly dependent on compression of the nerves coming from the pelvis, on the side towards which the organ inclines. I have merely mentioned what I have observed, leaving it to future observers to clear up what is obscure in the matter. The co-existence of a morbid condition complicating a deviation has been till now a great obstacle in the way of determining the special character-

istics of each; but a strict analysis of facts has put us on the right track, as will be seen still more clearly when we come to consider flexions.

Objective signs.—If it is difficult to judge of the existence and direction of a deviation from the symptoms experienced by the patient, it is on the contrary very easy to determine it by *direct exploration*. The association of palpation with vaginal and rectal touch, the use of the sound (except in cases of pregnancy), the catheter, and the speculum, leave us in no doubt as to the existence and direction of a uterine version. It must not, however, be forgotten that in Levet's case the anteverted fundus was taken for a stone, and that the patient died from the consequences of lithotomy performed owing to the mistaken diagnosis; a slight engorgement of the anterior wall of the uterus and an unusual shortness of the round ligaments (probably also of the utero-sacral ligaments) were the only appreciable causes of this displacement.

In anteversion the cervix can only be felt by digital touch in the concavity of the sacrum where it is often difficult to catch the os which looks straight backwards. When the finger can bring the cervix forward the displacement of the fundus in the contrary direction is easily perceived; catheterism associated with hypogastric palpation renders the direction of the displacement and the temporary replacement of the organ still more evident. Rectal touch determines the degree of compression exercised on the rectum by the neck, and discloses the absence of the rest of the organ above this inferior segment; it shows that the shortened utero-sacral ligaments are stretched when we try to replace the uterus; above all, it decides the question whether there is any tumour behind the uterus either belonging to that organ or foreign to it by which the deviation is caused. The speculum only allows the anterior lip to be seen; in order to bring the whole organ into view the cervix must be caught by tenaculum hook forceps or a sound and drawn forwards whilst the speculum is inclined backwards, the buttocks of the patient being raised, or her lower limbs flexed as far as possible. In using the sound the handle must be considerably lowered so as to depress the fourchette, whilst the hypogastrium must be compressed in order to raise the fundus; the buttocks of the patient must project over the edge of the bed or the instrument will not enter the cavity of the womb; then the replacement of the organ should be attempted gently, with a view to revealing the presence or absence of adhesions, the degree of retraction of the utero-sacral ligaments and the possibility of a return to the normal direction.

In retroversion, after having vainly tried to discover the cervix in the posterior vaginal *cul-de-sac* which often presents a bulging in the form of a smooth and rounded tumour owing to the presence of the retroverted fundus, we at last find it against the anterior wall and discover the os behind the pubic symphysis. In bringing it down the finger experiences the sensation of the gradual replacement of the fundus. This sensation becomes more evident, and replacement easier

if rectal is combined with vaginal touch. When this replacement is effected, the association of abdominal palpation with vaginal and rectal touch reveals in the hypogastrium the presence of the fundus which before was absent. Various circumstances may have increased the size of the uterus, especially gestation which may render replacement painful and difficult. Examination of the cervix by speculum often becomes even more difficult than in anteversion; in order to bring the diseased organ into view and apply remedies to it, I have sometimes been obliged to place the patient in pronation on her elbows and knees, or on one side, or in a standing position with the trunk flexed on the thighs, the speculum being introduced from behind. In using the sound the handle of the instrument must be raised towards the pubis, whilst a finger introduced into the vagina or rectum raises the uterus and ascertains the absence or presence of adhesions which may retain the fundus in the vagino-rectal *cul-de-sac*.

It is unnecessary to dwell long on lateroversions, except to say that they never reach the same degree that antero-posterior deviations do, and that other causes are added to the preceding in producing them, viz. the relaxation or contraction of the broad and round ligaments, alone or associated with relaxation or contraction of one of the utero-sacral ligaments.

When the uterus resists reduction, it is important to *diagnose carefully the irreducibility and the cause of the irreducibility*. In the case of anteversion, if the fundus of the uterus is fixed anteriorly by adhesions, which is rare, it will be impossible to raise the organ by the usual method, which consists in bringing the neck into the anterior vaginal *cul-de-sac* behind the inner surface of the pubis with the index finger of the left hand, whilst the fundus is pushed backwards by the other hand acting on the hypogastrium through the abdominal wall; if the neck is retained posteriorly by the shortened sacro-uterine ligaments, by introducing the index finger into the rectum or even by directing it towards the posterior *cul-de-sac* of the vagina at the same time that the cervix is depressed by means of the tenaculum hook, the sacro-uterine ligaments will be felt stiff and resisting like two stretched guitar strings. In the case of retroversion the sound must necessarily be resorted to. Sims¹ prefers his articulated one, in order to avoid injuring the fundus in raising the organ; I prefer a flexible instrument the curve of which can be adapted to circumstances; whilst trying to replace the uterus with this instrument, we can, by means of rectal or vaginal touch associated with external palpation, determine the existence of any utero-peritoneal adhesions or of any tumour adherent to the uterus, sessile, pediculated or independent of this organ. We may remark that the means of examination just described and the analysis of the symptoms serve not only to prove the existence of a deviation and to show its direction, but they also make known its condition, whether reducible or not, and the co-existence of various *concomitant pathological conditions*, and whether they exist as cause, effect, or as simple complication. The importance of this part of the

¹ *American Journal of Medical Science*, Jan. 1858.

diagnosis will be understood if we consider that the symptoms observed in cases of deviation are due to these morbid states as well as to the deviation itself, and that there is a possibility of rendering the deviation tolerable by first curing the complication ; and in the second place, if we reflect that, whatever be the sequence of the pathological phenomena, even if the deviation should be the cause of several of the phenomena, such as congestion, engorgement, hypertrophy of the uterus, &c., the deviation is always the result of some cause, whether laxity or contraction of the ligaments, or increased weight and volume of the uterus, or unequal relative proportion of the two segments, various pathological conditions of the organ, functional disorders of the neighbouring organs, peri-uterine inflammation and its consequences, or tumours of the appendages or pelvic cavity. All the indications which serve as a basis for the treatment of uterine deviation arise from a well-made analysis of these various elements of the question.

Treatment.—There are few uterine diseases which resist treatment more than deviations. This is owing to the difficulty of discovering the true causes, and still more of finding suitable means of combating them successfully.

The best indications are those drawn from the nature of the malady. Unfortunately this nature has been very little known till lately. This ignorance of the indication as well as the difficulty of resolving it unfortunately led the last medical generation to form a hopeless prognosis, which may be summed up in Velpeau's words : " Versions do not kill, but they are never cured." In fact when once produced they have little tendency to improve ; on the contrary, they almost always become worse, and exercise a more and more marked influence on the general health, which is gradually disordered, as in all chronic uterine affections. Till lately they have resisted the (apparently) most rational treatment, condemning women to a miserable life owing to the rest to which they were forced to submit, and the necessity of using all their lives means of retention as troublesome as insufficient. During the last few years, however, owing to a more exact analysis, the true causes of deviations have been discovered, and have been found to differ in each case, so that there is now reason to hope that a curative treatment may be instituted for each.

I have observed with great interest that several physicians have followed me in the path of analysis which has led me to discover the true cause of each deviation and each flexion, or they may have set out in ignorance of my investigations arriving at an analogous result, which is the best confirmation of the correctness of my conclusions. These conclusions, of which I gave some indications in the first edition of this work, and which I explained clearly in the second edition in 1871, have since been developed in a paper on retroflexion read before the French Association for the Advancement of Science in 1874. In Germany and England the cause of flexions and versions has been appreciated in the same way by very competent men, especially by Schultze and Barnes. I can therefore confidently present the results at which I

have arrived, and will here state them in so far as they relate to versions.

Anteversion, so long as the mobility of the organ is preserved, is only an exaggeration of the normal direction of the womb; when there is immobility owing to neo-membranous adhesions above the bladder or exudations and retractile cicatricial tissue in Douglas's pouch, or contraction and shortening of the utero-sacral ligaments, it is pathological and requires serious treatment.

Retroversion is always abnormal or pathological; it involves a direction of the organ quite contrary to its normal one, and may reach a degree considerably exceeding the greatest degree of anteversion. It is also due to the elongation of Douglas's ligaments, although other causes may incline the organ in this direction. We must therefore consider how these ligaments can be shortened.

The shortening or the elongation of these ligaments may be associated with the shortening or elongation of the broad ligaments or some other such alteration in the same or in a contrary direction, on those of the same or a different side, whence a mixed inclination accompanied by torsion, latero-position, &c. &c.

1. *Treatment of Versions in general*

The *indications* are necessarily grouped under three heads, according to whether they are addressed to the cause of the malady (medical treatment), or only to its effects (mechanical treatment), for which the indication may be either reduction or the maintenance of reduction when once it has been effected.

I. *General and local medical treatment* is that which is addressed to the cause.

The original cause of the deviation possibly being in the uterus, any *increase in volume or in the weight of the organ* will be treated, according to whether its nature be congestive, hypertrophic or inflammatory, by resolvents, alteratives or antiphlogistics, as well as by antidiathetics appropriate to the affection which keeps up the congestion. If the tumefaction of the uterus depends on pregnancy it will be treated simply by posture, and often this cannot be done till after reduction, but it will very seldom be treated by abortion or evacuation of the uterine cavity. If it depends on the presence of a tumour, it may in some cases be treated by extirpation of the tumour.—If the cause proceeds from an *alteration in the means of suspension* it will be treated by resolvents, tonics and all general and local means suitable for overcoming sometimes contraction (for anteversion), sometimes elongation of the ligaments (for retroversion), such as restoratives, iron, mineral waters, hydropathy, electricity, strychnia, &c. The same means may be employed in different cases or in complex cases, for they may be applied simultaneously with equal effect to total or partial tumefaction of the uterus or to the alteration of its suspensory organs, and it is unnecessary to say that posture may favour their action. By the use of these means we usually succeed in obtaining a

tolerance analogous to that which characterises the arrival of the menopause which puts an end to complications and reduces the version to its simple state.

II. *Reduction* is directed to the effect, *i. e.* to the version. It may be *impossible* owing to adhesions or even to extreme contraction of the ligaments, as in certain anteversions. Even then we must not give up hope of triumphing over them by resolvents. It may be *difficult*, *e. g.* when the gravid uterus is fixed in the pelvis in a state of retroversion: in this case the difficulty may reach impossibility, therefore evacuation of the bag of waters¹ by puncture has been tried, in order to make reduction possible. Supposing reduction is *possible*, how should it be performed when the uterus is empty and when it is full? When it is empty the hand, the sound or other instruments may be used. When it is full it is sometimes indispensable, after employing the instruments or manœuvres of reduction, to subject the patient to certain preliminary operations, catheterism, or vesical or uterine puncture, &c. In all cases and before any reduction care must be taken to empty the bladder and rectum.

Reduction requires that the patient should be placed in a special *posture*, varying according to the direction of the inclination. In reducing anteversion the most favorable position is the dorsal decubitus with forced flexion of the lower limbs and elevation of the pelvis. In retroversion it is the genu-pectoral posture.—The *manœuvres* of reduction are performed by the introduction of one or more fingers or of the whole hand into the vagina, combined with hypogastric palpation and pressure; in a word, by bimanual palpation. In rare cases, where the hand does not suffice to reach and push back the uterus through the vaginal walls, some simple instrument that could not hurt the vaginal mucous membrane can be used. Marion Sims uses sponge-holders furnished with sponges, one of which, resting in the posterior *cul-de-sac* of the vagina, raises the fundus of the uterus in retroversion, whilst the other, resting afterwards on the anterior lip of the cervix, assists the action of the other and completes the reduction; the latter may be replaced by a tenaculum hook fastened into the cervix and drawing it backwards. If the introduction of the hand into the vagina does not suffice we must try to effect replacement of the uterus by the rectum, introducing one or more fingers, or the whole hand as Dusaussay did, or an empty bladder, which is distended with air when in place, or a wooden instrument, &c. These vaginal or rectal manipulations may be aided not only by pressure on the hypogastrium, but also by raising the uterus by means of a sound introduced into the bladder. Lastly, in a state of vacuity, the sound should be used after the other means to effect reduction. In every case it is the best means of determining whether reduction is possible or whether it is hindered by utero-peritoneal adhesions or extreme contraction of the ligaments; but the possibility of these serious complications must never be lost sight of, the sound being

¹ Wm. Hunter, *Mcd. Obs. and Inquiries*, iv, 406.—Churchill, *op. cit.*, p. 428. Dublin, 1864.

used with great care, so as to prevent the effects of a dangerous traumatism in the case of these obstacles existing.

III. *Retention is easy* in pregnancy, *i. e.* when reduction itself has been difficult, as occurs in cases of hernia or luxation necessitating replacement of the organs in their natural relations. In proportion as the foetus is developed and the uterus rises it becomes less and less possible for this organ to enter the pelvic cavity, and consequently for the deviation to be reproduced.—In all other cases, on the contrary, retention is *very difficult*. Therefore it is necessary to repeat the manœuvres of reduction from time to time, so that the advantages of the instruments of retention may not be lost. The idea has been entertained of making use of the instruments of reduction for retention strictly so called. Such was the origin of the methods so much talked of a few years ago, and which, like so many others, have been alternately too much praised and too much decried.

1. *Uterine pessaries*.—The simplest of these instruments is Simpson's stem pessary, the ball of which by filling the uterine extremity of the vagina suffices to keep the instrument in place and the uterus reduced.¹ I think it should be used as little as possible, its application being reserved for flexions, and care being taken not to leave it in the uterus for more than a few hours. In the following chapter I will indicate the best way of making short and repeated applications of the galvanic director and the advantages to be obtained from it.

2. *Vaginal pessaries*.—The dangers inherent in the use of intra-uterine pessaries have led to their being almost completely abandoned for *vaginal pessaries*. Globular pessaries have been tried, care being taken to apply them in the anterior vaginal sinus in cases of anteversion,² in the posterior pouch or in the rectum in cases of retroversion, so as to take up the place which the body of the organ would occupy in leaning forwards or backwards, and consequently to prevent the return of this inclination. This mode of retention, however, can only be effectual when there is a considerable and painful distension of the vagina. A good plug of cotton saturated with glycerine or charged with tannin may render great service if placed behind the cervix in anteversion, and before it in retroversion; in the latter case its action will be assisted if the perinæum is raised by means of a good perinæal pad. The inefficiency of the globular pessaries has led to their form being modified so as to make them bulge more at the side, where they have to exercise pressure on a higher level in the vaginal *cul-de-sac* to prevent the fundus from falling back into it. Even this, however, is insufficient. Hence Hervez de Chégoin's idea of the shovel pessary (see Fig. 172, p. 197), intended both to maintain the position of the cervix

¹ Valleix, by giving more fixity to the instrument, by the form and adjustment of his plate and by the supporting bandage which he added, spoiled in place of improving it; and the fatal results due to its use are to be attributed to this absolute immobility which he gave it.

² Steiger succeeded in curing an anteversion causing sterility, of many years standing, in two months, by advising the patient to retain her urine as long as possible. The distended bladder in this case acted better than the best pessary would have done.

and to straighten the fundus; Kennedy's pessary was of the same kind. These pessaries suppose the integrity and resistance of the perinæum which forms their basis of support. In the numerous cases in which this support is wanting it must be replaced by a T bandage, or else elastic pessaries of the same shape must be substituted. They may also be replaced by the pessary of Simpson and Priestley (*see* Fig. 173, p. 197), or better still, by Hodge's sigmoid parallelogram (*see* Fig. 175, p. 197) in aluminium. In treating of prolapsus I described its mode of action and the way in which it should be introduced (Fig. 260). It is equally useful in the treatment of retroversion, though it cannot be trusted to absolutely; whilst its insufficiency for anteversion is evident. A lever pessary should be modelled in tin mixed with a little lead to the size and form of the vagina of each patient. When properly adjusted this malleable model is sent to an instrument maker, who makes a replica in silver or aluminium. This pessary often alleviates pain in retroversion, and it rectifies the position of the organ sufficiently to facilitate conception by the mechanism explained when treating of prolapsus (p. 379). I have modified Hodge's pessary, making it suitable for retroversion and retroflexion, by adding to it a cervical arch, which keeps the cervix back, preventing it from coming forwards again, and which consequently prevents the fundus from falling back. At the union of the cervical arch with Hodge's lever two pieces of whalebone allow the two parts of the instrument to approach each other in order to facilitate its introduction by the vulva.

3. *Means of retention to be applied in the neighbourhood of the uterus.*—The use of *large tampons in the rectum* has been proposed by Huguier¹ in the treatment of retroversion and retroflexion. But for such high authority I should have thought such a means impossible, on account of the pain and tenesmus that it would provoke, not to speak of the repugnance it inspires. *The hypogastric belt* (Fig. 148) is useful during pregnancy in supporting the uterus when inclined more or less forwards. In a state of vacuity it is also frequently useful, because it supports the abdominal viscera and prevents their weight from pressing painfully on the uterus, especially in the case of anteversion. In the case of retroversion I am convinced that the use of the hypogastric belt increases the pain, owing to the propulsion of the viscera towards the vertebral column, which, combined with the weight of these organs, produces a resultant directed into the cavity, *i. e.* against the retroverted uterus. The uterus probably then supports a more considerable pressure than when a portion of the visceral pressure is not pushed back by the belt, but is freely exercised on the hypogastrium. This explanation seems to me all the more likely as patients affected with retroversion always complain of the use of a hypogastric belt, and I have relieved a great many by simply making them lay it aside. Many physicians are in the habit of prescribing it for every deviation, with the mistaken idea of immobilising the uterus and viscera without considering the real effect that it produces.

¹ *De l'hystérométrie*, p. 337. Paris, 1865.

Thus, on the one hand the hypogastric belt, alone or aided by the perinæal pad (*see* Figs. 150, 151, 152, p. 192), on the other hand the perinæal pad associated with the use of a Hodge's lever pessary in the vagina, or better still my modification of it, are more generally effectual, the former in anteversion, the latter in retroversion. I have sometimes used them with great advantage for patients who could not walk without them. In applying them I have never thought of immobilising the uterus, but only of maintaining, by the equal pressure in all directions which this organ then receives, the rectitude of its position or at least its stability sufficiently to prevent its exercising pressure or causing dragging pains or undergoing the same from neighbouring organs; in short, from experiencing or provoking pain.

4. *Operations for retention.*—Lastly, *cauterisation* may be employed as a natural means of retention which may become curative. It may be applied in two ways: as a resolvent of an engorgement or chronic hypertrophic congestion, or as a means of replacing the uterus in position by the retractility of the cicatricial tissue which follows the suppuration produced by burning. The former mode, by diminishing the tumefaction and weight of the organ, diminishes also its tendency to incline towards the side on which its centre of gravity is deprived of support or suspension. In such a case cauterisation ought to be applied largely to the cervix or deeply to its tissue by ignipuncture applied to several points of the most tumefied portion; it may be destructive if the latter is much swollen; in any case it acts as an alterative, bringing into play a work of absorption and resolution under the influence of which the size of the organ may diminish in a few weeks and especially in a few months in a notable manner, especially when this action is seconded by hydropathy and resolvent medication. The second mode, that of *replacing the organ*, which I have employed for a long time after the example of Amussat¹, aims at forming a cicatricial band, extending from the neck to one of the vaginal walls and occupying the utero-vaginal sinus which corresponds to the inclination. That is to say when there is anteversion the caustic must be applied in the anterior sinus, so that the cicatricial band in contracting may bring the cervix near to the anterior wall of the vagina, and by making the whole organ swing in its suspensory ring, separate its fundus from the bladder and raise it in the cavity; in cases where the anteversion was not pathological I have had some success from the use of this means. When on the contrary there is retroversion, the caustic or fire must be applied in the posterior sinus, so that the cicatrix in retracting brings the cervix near to the posterior wall of the vagina, and removes the fundus from the rectum; but it is dangerous to use this means in a case of retroversion on account of the peritoneum being so near. The *suture of a transverse fold of the vagina* may be resorted to in place of cauterisation, so as to shorten one or other of the walls of this canal. Marion Sims has performed this operation three times in cases where the anterior wall

¹ *Comptes rendus de l'Acad. des sciences*, fév., 1859.—Philippeaux, *De la cautérisation*, p. 557. Paris, 1856.

of the vagina was extraordinarily long, and appears to have been successful. There would be less chance of curing retroversion by performing the same operation on the posterior wall, and it would be more dangerous as I have just explained.

2. *Treatment of Versions in particular.*

Having described the course to be pursued in the general treatment of deviations, we must now indicate the means to be employed in the special treatment of each.

I. *Anteversion*, like anteflexion, is normal, and continues to keep this character even when it has attained a considerable degree, so long as the uterus preserves its mobility, a proof of the absence of adhesions and of perimetritis. A *hypogastric belt* with a pad will suffice to relieve the patient by supporting the viscera and so preventing them from pressing painfully on the posterior (now the superior) surface of the uterus. When *anteversion* is *pathological* and the peritoneal adhesions are in front (utero-vesical) between the fundus of the uterus and that of the bladder, or behind (posterior perimetritis) between the cervix and the rectum, or if the pathological anteversion is produced either by retraction and shortening of Douglas's ligaments consecutive to a subacute inflammation, or to a spasmodic contraction of these ligaments, it will always be well to prevent the viscera from painfully compressing the uterus by supporting them with a hypogastric belt.

At the same time energetic *general and local resolvent treatment* should be applied according to the sensitiveness of the patient, her tolerance and the varying indications due to the varying circumstances of which I have spoken. Excepting the variations to be introduced into this treatment, we may mention: repeated laxatives and purgatives, diuretics, alteratives (iodide or bromide of potassium long continued in large doses, chloride of gold and sodium, &c.), alkalines, especially the natural and artificial baths at Vichy, with vaginal injections combined with hydropathy, sometimes rest and the dorsal decubitus continued for long, or sedative, antispasmodic, alkaline injections, &c., on the bidet four times a day, the use of tampons saturated with glycerine or belladonna, rectal injections of mercurial ointment mixed with laudanum and belladonna, or a solution of iodide of potassium, or suppositories of the same composition, sometimes with the addition of hydrate of chloral, chloroform or laudanum as antispasmodics, &c. Fortunately version, when simple, after all inflammation has disappeared, is not painful. By the use of the means just mentioned a cure is generally obtained; but time is required, one or two years (two seasons at Vichy), but the long-desired result is at length attained.

II. *Retroversion is always pathological*, for it is the opposite of the normal conditions of stability of the organ. Rupture, elongation of Douglas's folds, relaxation of the retractile muscles which support the uterus are the most common causes. The use of the sound is almost always indispensable to reduce it; one or more fingers should be

introduced into the posterior vaginal *cul-de-sac* or into the rectum, and everything that is possible should be done to liberate the wedged-in organ, *e.g.* evacuate the bladder and rectum, not forgetting to make the patient assume the genupectoral posture.

The importance of the *genupectoral* posture in the reduction of deviations and prolapsus has been explained by H. F. Campbell.¹ It is particularly useful in the *reduction of extreme retroversion*, which by this posture becomes an *automatic reduction*, to use the author's own expression. I have certainly seen the uterus replaced with great ease when this posture is assumed: all that is necessary is to introduce one or two fingers into the vagina so as to separate the labia majora (the patient can separate the vulval lips for herself by means of a simple canula), and to allow the air to penetrate into the vagina. This displacement of the centre of gravity and of the weight of the viscera, which have a tendency to fall towards the umbilicus, the traction exercised by the abdominal organs on the uterus by the close contact of the one with the other, the atmospheric pressure acting through the vagina, which it greatly dilates in the form of an arch, below which, in the most dependent part, the vaginal portion of the cervix is seen, are the three agents to which retroversion of the womb can offer no resistance: if reduction is not effected spontaneously the impulse which the fingers of the physician give to the uterus in forcing its fundus out of the concavity of the sacrum obliges this organ to resume its normal direction. I have insisted on the possibility of reducing retroversion by this method in order that physicians may understand its importance and explain it to their patients, so that the latter may be willing to assume this posture as well as the abdominal decubitus, which is so useful to them. After they have once become accustomed to it they are so much relieved that they willingly continue it till they are completely cured.

As for the retention of the uterus in its normal position, the only means of maintaining reduction is to keep the cervix back in the sacral cavity. This can be done by means of a sponge (*see* Fig. 154, p. 193) or tampon saturated with a solution of tannic acid or alum, or by means of Hodge's pessary, as modified by myself, which forces the cervix to remain against the sacrum.

It is well to use both alternately; the pessaries retain the cervix better, whilst plugs have the advantage of conveying astringent applications to these parts suitable for inducing contractility in Douglas's ligaments and determining retraction or shortening, the only and indispensable condition of permanent replacement of the organ. The good of these pessaries and tampons is that, by retaining the cervix in the sacral cavity they force the fundus forward, and so the whole organ resumes its normal direction of anteversion; the abdominal viscera, which formerly increased the retroversion, contribute now, on the contrary, by their pressure on the posterior (now superior) surface of the

¹ *Pneumatic self replacement in dislocations of the gravid and non-gravid uterus* (*Transactions of the American Gynecological Society*, vol. i, p. 193. Boston, 1877).

uterus, to maintain this organ in the natural position to which we have restored it. When the patient is not standing she ought to assume the abdominal decubitus, which forces the fundus to gravitate downwards.

It is important to ensure the persistency of the reduction by using all possible means to excite the contraction of the ligaments and bring about their shortening: astringents (alum, tannin, rhatany, &c.) applied to the posterior *cul-de-sac* of the vagina, round the vaginal portion of the uterus, or ergot taken in doses of from four to eight grains three or four times a day for five or six days, and repeated after a week's interval; the application of electricity by the interrupted current, one of the poles being applied to the lumbo-sacral region, the other round the cervix; immersion in a cold sitz-bath six times a day; hydropathy, cold and astringent vaginal injections, sea bathing, salt or aromatic baths or tonic and exciting frictions of the whole body every morning.

When *retroversion* has become *irreducible* owing to the formation of adhesions as a consequence of posterior perimetritis, the deviation is doubly pathological; pathological by its direction which is absolutely the reverse of the normal state, pathological by the inflammation which now complicates the retroversion, and sometimes is even in part the cause of it. These peritoneo-cicatricial bands not only constitute a malady in themselves, but they form a pathological condition in a second way, viz. as causes of irreducibility, and in a third sense by continually threatening a return of inflammation, all the more easily produced in that the compression, dragging and shocks which the uterus receives from or produces on the neighbouring organs in its vicious position (for the adhesions involve the contact of the fundus with the lowest portion of Douglas's *cul-de-sac*) are so many exciting causes of a fresh outburst of inflammation.—Therefore these retroversions are almost as painful as retroflexions. The extremely low position of the fundus near the perinæum and anus, the weight and the inflammatory pain of this heavy part, the pain produced by the least shock or dragging on the adhesions (and every movement occasions dragging or shock), continually provoke the slow return or sudden outburst of new pain.—Therefore the most energetic antiphlogistic and resolvent treatment must be associated with a wise mechanical treatment, according to the indication and the variations which it must undergo, depending on the stage of the malady.

At the commencement, antiphlogistics, sometimes leeches, repeated laxatives, rectal injections of resolvent and sedative ointment (*see* p. 185) applied twice a week, alkaline, gelatinous, emollient and sedative baths every day for several hours' duration with vaginal injections all the time, and the abdominal decubitus, with, later on, Vichy waters and hydropathy, bromide and iodide of potassium, sometimes even blisters on the loins, thighs or sacrum, produce astonishing results. We find after repeated attempts to effect reduction that the deviation becomes gradually mobile, moving gently under the simultaneous pressure of both hands, and sometimes in the end allowing of reduc-

tion with the help of the sound: these cases I admit are rare, but they are to be met with in young women, and it is a great matter to know that such a deviation when taken early is not incurable.—It is evident that as long as the retroversion remains irreducible it is useless to struggle against the adhesive perimetritis by the use of instruments for restoring the uterus to position, the only effect of which would be to keep up and to increase the inflammation. Patients may, however, be relieved by the use of a perinæal pad attached to a good belt (not a hypogastric belt with pad), which raises the perinæum, the pouch of Douglas and the body of the uterus; whilst the inflammation and the adhesions produced by it are placed in the state of absolute rest which is required by all inflamed organs.—When the adhesions have disappeared and replacement is obtained, reduction should be repeated as often as necessary, and the patient should be taught to do it herself with the help of her nurse or husband, according to Campbell's method, by assuming the genupectoral posture at bedtime, and the abdominal decubitus all the night. The reduction should be maintained as much as possible during the day by the use of my pessary, whilst contraction of the suspensory ligaments and of the uterine tissue itself may be excited by introducing the galvanic intra-uterine stem for a few hours once or twice a week. The treatment of retroversion is more difficult than that of any other version, and in many cases we have to content ourselves with a palliative cure; nevertheless, so much progress has been made in this department of medicine during the last few years by patient investigation of the anatomical alterations which are the causes of this malady, that we have reason to hope we may obtain a large number of cures in the future.

III. *Latero-versions* are always pathological, whether simple, *i. e.* determined by the simultaneous contraction of the posterior ligaments and the broad ligaments of the same side, or complex, with torsion of the axis, determined by contraction of one of Douglas's ligaments on one side and one of the broad ligaments on the other. In all cases there has been parametritis or perimetritis, spasmodic contraction and retraction, either cicatricial or consequent to subacute or chronic inflammation. There is really no other treatment for it than that which I have already indicated for pathological anteversion (p. 403).

FLEXIONS

1. *Flexions in General*

Flexions, inflexions, incurvations of the uterus are alterations in the direction of the various parts of the axis of this organ with regard to each other. According to my experience they are more common than versions. They involve a modification in the form of the organ, but do not imply a change in its position or direction. The uterus may remain in its normal position whilst bent on itself, or it may simultaneously experience a double or treble change in its form, direction and position. It must be admitted that version and flexion of the same side are met with more frequently combined than separately. They

may be congenital or accidental, simple or complex, having their seat at one point or another and at various degrees, bending the organ forwards, backwards, or on one side.

Congenital flexions occur from inequality of development or imperfection of histological formation.—*Accidental or acquired flexions* involve a predisposition and a determining cause or pathological alteration. They are the consequence of the accomplishment of the uterine functions and of modifications produced in the tissue of the organ: menstruation, pregnancy, delivery, abortion, predispose to them in consequence of the tumefaction of the organ, the increased size of its cavity, the relative defect in the resistance of its walls, the alteration of its constituent elements, &c.; so that a very slight cause, a vicious position, pressure or shock, may suffice to flex the organ on itself, owing to defective resistance of its tissue. Lastly, a uterine or peri-uterine pathological alteration may produce the same effect independently of any predisposition: a partial tumefaction of the softened organ, the unequal increase of size in the two segments, a retraction or partial fibrous transformation of one of the uterine walls, a fatty degeneration and defective resistance of the tissue at the isthmus or some other point, the elongation of the uterus or of one of its parts, peri-uterine inflammation and its consequences, peritonitis whilst the fundus is in retroversion or after labour and the formation of adhesions between the fundus and the utero-rectal *cul-de-sac*, preventing the replacement of the body whilst the cervix may resume its normal direction: such are the causes which may flex the uterus on itself.

Simple flexions are rare, complications usually occurring as consequences, if they had not previously existed as causes.—*Flexions with complications* are more common. Amongst the maladies which most frequently coexist with flexions are: uterine and peri-uterine inflammation; total or partial hypertrophic elongation of the uterus; peritoneal adhesions between the fundus or body of the uterus and the neighbouring organs; engorgement, chronic congestion, repeated fluxions; tumours of various kinds, intra- or extra-uterine, which may, by increase of weight or pressure or from being wedged in, keep the uterus flexed on itself; lastly deviations and displacements, which may coexist with flexions either together or separately, so that prolapsus, retroversion and retroflexion may be met with simultaneously. These complications are so frequent that several writers describe flexions with versions and other mechanical lesions of the womb; but although this combination is frequently found in nature they should not be confused together in a common description. Other physicians, rightly appreciating the great symptomatic difference which exists between anteversion and retroversion, anteflexion and retroflexion, as well as the analogies between anteflexion and anteversion, retroflexion and retroversion, as concerns diagnosis and treatment, have given a common description of inclinations forwards (flexions and versions) and of inclinations backwards (flexions and versions); it seems to me, however, that what is gained on the one hand by bringing together lesions which furnish similar indications, is lost on the other by separating maladies giving rise in many

points to common symptoms. Their coincidence can be seen and explained. Thus, when flexion is very marked, especially backwards, it increases the weight of the uterus and gradually determines retroversion; this retroversion becomes permanent owing to the elongation caused by continuous traction on the uterine ligaments. This will be still more the case when flexion is produced after delivery, when the ligaments are soft and relaxed like the tissue of the uterus itself; hence retroflexion and retroversion are often met with simultaneously, for the same cause produces the same effects on the uterus and on the ligaments, so that the organ is both flexed and deviated. In many other circumstances, however, especially in congenital flexions, the bent uterus is not deviated; the tissue of the organ only is altered, that of its ligaments being healthy.

The seat of the flexion is variable. Usually it is at the isthmus. The flexed uterus resembles a chemical retort. The reason why flexion occurs most frequently at this point will be found, according to Virchow, in the adhesions between the neck and the bladder. I think a stronger reason may be given, viz. the relative defective resistance of tissue at this point of junction of two different organs (body and neck) united into one (uterus). It must not, however, be thought that it is always so, and that uterine flexion necessarily means flexion of the body on the neck. The alteration of tissue, weakness or contraction, may be only in the body or only in the neck. Why should we not admit this when we know that it is often produced on one of the segments of the uterus, the anterior or posterior, to the exclusion of the other, and even, according to Martin, on one part of a segment (the seat of the placenta) to the exclusion of the others? Thus there are *flexions of the body* and *flexions of the neck*. Further, the flexion may affect both body and neck. In the latter case it is produced in the same direction, and gives to the uterus a horseshoe curve, the two extremities of which, fundus and os, are directed to the same side, a deformity usually congenital, especially in ante flexion; but it sometimes happens that two flexions are produced in opposite directions, *e.g.* curving the body backwards and the neck forwards, so that the fundus and cervix look in opposite directions, and the uterus, as a whole, takes the form of an S.

Whether the flexion have its seat on the isthmus or on one of the segments of the uterus, it may vary in *degree*, from the slightest curve to the most marked flexion, the two portions of the organ forming between them an obtuse angle in the first case, and an acute angle in the second. *Curvature* or inflexion is almost a physiological state, especially when it is forwards; it is very common, and is frequently associated with deviations.

Flexion properly so called is very frequent. It may require the help of art and derive benefit from it.—Under the name of *infraction* Sommer¹ has described the very rare state in which the uterus is flexed

¹ *Beiträge zur Lehre der Infractionen und Flexionen der Gebärmutter, Deutsche Klinik*, 1850, S. 276. Quoted by Paul Picard, *Des inflexions de l'utérus à l'état de vacuité*. Paris, 1862.

on itself to such an extent that the two portions of the same surface become parallel and contiguous.

Lastly, whatever the seat or the degree, flexion may take place in *different directions*.

Flexion of the neck, the importance of which seems to have been exaggerated in America,¹ seems almost always in one direction, viz. forwards; it also usually coincides with ante flexion of the body, as well as with elongation of the neck, narrow os, and several of the conditions of mechanical dysmenorrhœa. According to the authors who have described it, it is the most common of all. Flexion of the body is more variable.

Sometimes it is forwards and goes by the name of *ante flexion*, which is the most common amongst nulliparæ. In the fœtus this disposition may be regarded as normal, and depends either on the imperfect development of the anterior wall at that age, or on the thinness and softness of the body coinciding with thickness and rigidity of the neck; in the adult it often depends on the persistence of this foetal disposition or on the retraction of the tissue of the anterior segment of the organ, as well as of the utero-sacral ligaments, consequent on retro-uterine inflammation, which has procured for this variety the name of pathological, as distinguished from congenital, ante flexion. The fundus touches the upper surface of the bladder; the neck rests in the axis of the vagina, lower than or on a level with the fundus, according to the degree of the flexion; usually it is flexed forwards, *i. e.* in the same direction as the fundus, in the form of a horseshoe, very seldom backwards, in the form of the letter S.

Sometimes it is backwards, and is then designated *retro flexion*. Seldom congenital, and therefore less frequent than ante flexions, occurring generally after delivery or miscarriage, *i. e.* usually pathological and more common than pathological ante flexion, often met with in old women, it necessarily involves a softening of the tissue on a level with the isthmus or with the seat of the curvature, relaxation or elongation of the suprapubic ligament, rupture or distension of the utero-sacral ligaments; in short, the opposite of ante flexion. The fundus rests on the anterior surface of the rectum, in the peritoneal vagino-rectal *cul-de-sac* (Fig. 1), where it may be easily felt, either through the vagina or through the rectum, sometimes higher than the neck, sometimes on the same level, sometimes lower. The neck may



FIG. 267.—Flexion of the neck forwards with conical neck and narrow os.

¹ Emmet, *The Etiology of Uterine Flexures, with the Proper Mode of Treatment Indicated* (Transactions of the American Gynecological Society, vol. i, p. 48. Boston, 1877).

also be flexed in the same direction or in the opposite one; but this coincidence of flexion of the neck with that of the body occurs less



FIG. 268.—Anteflexion supposed to be congenital, in a girl of eighteen (after Boivin and Dugès).



FIG. 269.—Extreme retroflexion, presenting occlusions at several points in the canal or cavity of the uterus. Preparation in the Middlesex Hospital (after Barnes).

frequently in retroflexion than in anteflexion. Statistics show that retroflexion is much more frequent than anteversion in multiparæ; whilst all the physiological dispositions tend to anteversion and anteversion, all the pathological causes incline to retroflexion and retroversion.

In *latero-flexions* and in intermediate curvatures the fundus of the uterus is discovered by exploring on each side of the neck or of

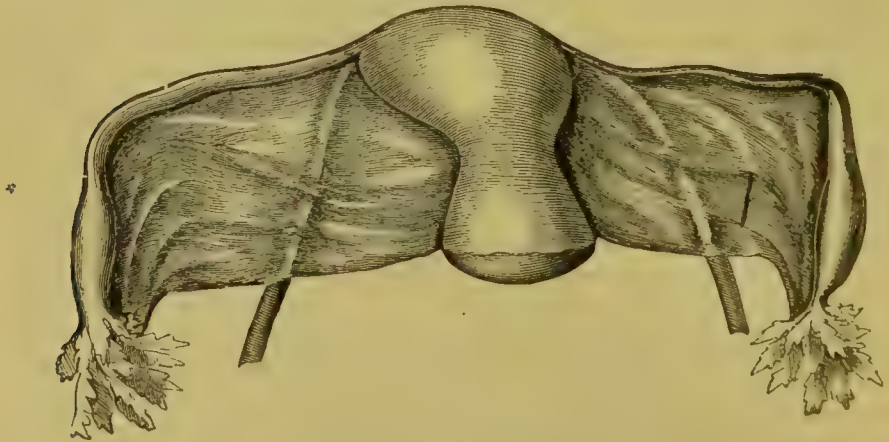


FIG. 270.—Uterus strongly inclined to the right, or appearance of dextro-flexion. Probably the left side is imperfectly developed (after Tiedeman).

Douglas's ligaments, as we try to depress the lateral vagino-uterine sinus with the finger. These flexions are much rarer than the preceding, and always result from some anomaly or pathological condition of the ligaments or of the two segments of the uterus (Fig. 270).—*Torsion* of the uterus is still rarer; it coincides with latero-flexions and seems to depend on the same causes, especially on the alteration

and change in the length of the ligaments of one side occurring at the same time with softening of the tissue of the uterus (Fig. 271).—*Alterations of the tissue* of the uterus, ligaments or neighbouring parts, and the other uterine lesions concomitant with flexions, are variable in different flexions, in the same flexion at different periods, and in different women.

In the first place one of the alterations must have existed before the uterus could become bent on itself; in the second place the uterus cannot long remain flexed in the period of sexual activity without, under the influence of menstruation, coitus, &c., and by the fact

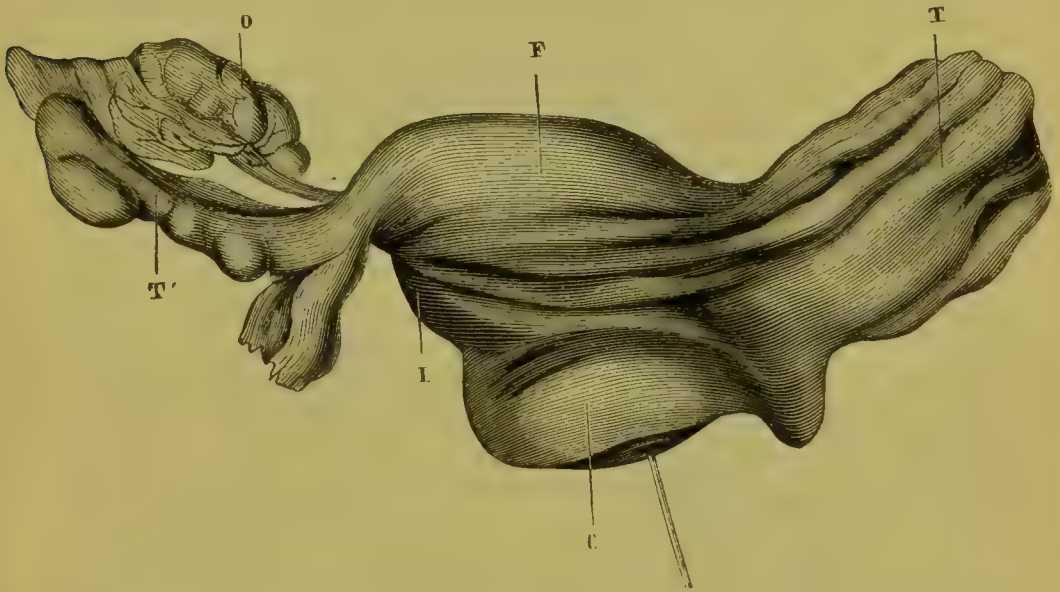


FIG. 271.—Dextroflexion and torsion of the uterus from right to left. Preparation in the College of Surgeons, London, by Protheroe Smith (*British Medical Journal*, 1872, vol. i, p. 517), after Beigel, op. cit., vol. ii, p. 218, 1875. c, neck, with a probe introduced to indicate the direction of the canal; I, point of flexion at the union of the body and neck; F, fundus; T, left Fallopian tube; O, right ovary, diseased; T', right Fallopian tube, diseased.

of its flexion, producing some alteration in its substance or surroundings.

The increased size of the uterus, the elongation of its longitudinal diameter, the softening of its tissue,¹ especially at the isthmus which is the thinnest portion of the organ,² the coincidence of these alterations with elongation, laxity or atony of the means of suspension, especially of the utero-sacral, broad and round ligaments are very favorable if not necessary conditions in the production of uterine flexions. This is why flexions so often occur after delivery or abortions,³ and why in such cases flexions are seen combined with versions,

¹ Kiwisch, *Die Krankheiten der Gebärmutter*, Bd. i, S. 101. Prague, 1851.

² Rokitanski, *Anat. pathol.*, t. iii, p. 457.

³ Scanzoni (op. cit. p. 86) and Nonat (op. cit., p. 495) rightly observe that abortion is more favorable to flexions than the puerperal condition, because in

anteflexion with anteversion, retroflexion with retroversion. This is also why the adhesions and cicatricial bands which are produced after puerperal metro-peritonitis themselves become causes of flexions all the more hurtful because they give a fixed and irreducible curve to the organ. Virchow,¹ however, has exaggerated the importance of these peritoneal alterations in attributing to them the majority of uterine flexions.

It is not necessary for the uterine tissue to be really altered to allow of a flexion taking place; but even in cases where the uterine tissue seems to be exempt from any alteration, and when the flexion is unobserved, there must be some cause for it. This cause, in foetal life and in childhood, seems to be the relative shortness of one wall (in the case in question the anterior wall, hence anteflexion); afterwards it may be traced to the relative thinness and weakness of the isthmus and to the indifference of position of the fundus which yields to pressure from the neighbouring organs, or to the relative weight of the body of the organ, which, having a greater tendency in some cases (especially after labour) to incline backwards, and finding no obstacle in any direction, falls more and more behind the neck into the pouch of Douglas. In early age the cervix offers more resistance than the body to displacements caused by pressure from the neighbouring viscera. The body, which is free, independent, and attached to the neck by a narrow portion, is, on the contrary, inclined to yield to the influence of this pressure and to incline forwards in growth, more frequently backwards in advanced life, version being very often combined with flexion in the same direction. There is, then, even in those kinds of flexion which are not pathological when compared with the flexions properly so called of adult age, a diminution in the relative resistance of the various portions of the uterine tissue which accounts for the flexion.

An alteration may even be produced in this tissue which I would call active in comparing it with the passive alteration of defective resistance; I mean the shortening of one of the segments of the uterus, due to the inequality of their development from defective organisation in the uterine tissue, to the contraction or retraction of its fibres, to the production of inodular interstitial tissue in its thickness. It is to this cause that we may attribute the abnormal persistency of foetal anteflexion (Cusco), some flexions of old age, and especially those rare but authentic cases in which flexion, in place of occurring at the union of body and neck, only affects the body, or the neck, or both at once, either in the same or in a contrary direction. I have lately seen a case of retroflexion at the menopause which I could only attribute to atrophy of the posterior segment of the uterus, especially on a level with the isthmus. Whether these alterations of tissue have or have

the first months of pregnancy only the body of the uterus is developed, while the neck is more firmly retained by vaginal adhesions and the isthmus relatively narrower and less resistant than at a later period.

¹ *Ueber die Knickungen der Gebärmutter*, Verhandl. der Gesellsch. für Geburtsk., iv, 80.—*Gesammelte Abhandlung*, ii, 822.

not preceded, prepared and determined the flexion, they do not fail to accompany it.

The investigations which I have made on the alteration which the tissue of the uterus may undergo on a level with the curvature and on the side of the flexion have proved to me, as to Robin, Aran, Virchow, Sommer, Scanzoni, that there is either a softening of the uterine tissue, which in this case is pale and its muscular fibres scarce or infiltrated with fat, as in the period of retrograde evolution after delivery, or else a retraction of this tissue, which is then hard, resistant and fibrous, like a cicatricial band (Fig. 272). It cannot be denied that the muscular tissue often becomes gradually thinner at the seat of flexion,



FIG. 272.—Retroflexion in the second degree, with persistence of the cervico-uterine canal (after Graily Hewitt).

being changed into soft cellular and fibrous tissue, which weakens and shortens the flexed wall, thereby ensuring the permanence of the flexion. Hence, in my opinion, the indication to stimulate the contractility of this tissue and to excite hypertrophy in order to cure the flexion.

When the flexion takes place at the isthmus it necessarily narrows the os internum. This diminution of size, which is at first purely mechanical, may afterwards become organic and permanent (Fig. 273). The wall of this orifice corresponding to the retreating angle of the flexion, forms a projecting angle, a kind of spur, which makes the passage of menstrual blood and leucorrhœic mucus from the cavity of the body into that of the cervix difficult, and the use of the sound still more so. It is easy to understand how this difficulty, which is overcome by uterine contractions during the period extending from puberty to the menopause, remains purely mechanical, the width and dilatability of the orifice being presented by the expulsion of blood at the monthly period. But it is also evident that, during this period, especially in early youth and old age, it must often happen that the gradual alteration of tissue, especially of the fibrous tissue at the point

of flexion, must end by causing this organic contraction, and by gradually producing obliteration.

The influence due, on the one hand, to external pressure, and on the other to softness of tissue or muscular contraction and retraction, accounts for one way in which alteration of the uterine axis is produced. I refer to *torsion* of this axis caused by a rotatory movement in an opposite direction of the neck on the body, or more frequently of the body on the neck. I have seen numerous examples of this kind of torsion, which is a common cause of sterility, and which I have suc-



FIG. 273.—Retroflexion in the third degree, with occlusion of the cervico-uterine canal owing to the close juxtaposition of the walls (after Graily Hewitt). In this, as in the preceding figure, the uterine tissue is pale and anæmic at the point of flexion.

ceeded in curing by progressive dilatations; it is easily recognised by the spiral direction which has to be given to the sound to allow of its passing from the cavity of the neck into that of the body, and it often coincides with ante flexion or retro flexion. Like flexions, it depends on the inequality of visceral pressure exercised on the two borders as on the two surfaces of the uterine body, or on an inequality in the shortening of the round or broad ligaments, which is more serious, as in this case the torsion may be irreducible. Lastly, the tissue of the uterus, when softened, congested, or otherwise altered before flexion, has a tendency to become increasingly so from the effect of the flexion. In cases where there was no change, as in flexions occurring in early life, the uterus may remain for some time without undergoing any of these alterations; but it is seldom that it does not in the end become affected, either from the fact of the declivity of the fundus, the difficulties placed in the way of circulation and all the conditions which favour its passive congestion, or above all from the effect of uterine fluxion at every menstrual period, from the difficulty with which the

blood is expelled from its cavity, from the modifications produced in the womb by pregnancy, from the accidents following delivery, &c. In consequence of these modifications and others occurring in the immediate neighbourhood a great many complications are produced which have to be taken into account in diagnosis and treatment.

Therefore in the adult woman retroflexion, which is frequent¹ in proportion to the number of rapidly succeeding pregnancies and the degree in which the uterine tissue has been altered, is in its turn frequently followed by chronic congestion, softening, hypertrophy, uterine leucorrhœa, granulations, ulcerations, uterine and peri-uterine inflammation extending even to the appendages, and hard inflammatory swellings, or latero- and retro-uterine adenitis, limited peritonitis, adhesions, the formation of bands keeping the fundus attached to the neighbouring parts,² prolapsus of the ovary, &c. There are great differences in patients. In some, flexion may have existed for a number of years without the uterus having contracted adhesions with the neighbouring parts and having ceased to be reducible. In others adhesions may exist from the commencement, having been formed at the same time as the retroflexion was produced; or it may be that the uterus, which for years had remained reducible, becomes in the end adherent to the rectum or to Douglas's ligaments, as a consequence of peri-uterine peritonitis.



FIG. 274.—Torsion of the body on the neck and contraction of the isthmus, seen in a multipara of thirty-five years.

Consequently, there are three causes which render flexions permanent: 1, the alteration of the tissue at the point of flexion; 2, adhesions between the fundus and the rectum or bladder; 3, the consecutive atrophy of the uterine wall at the side of the flexion. The chief effects on the uterus are: 1, contraction of the os internum, not only mechanical but organic, produced by the constant irritation and thickening of the mucous membrane at this point, or retraction of the muscular fibres; the tendency to obliteration during old age is probably increased; 2, congestions and menorrhagic tendencies; 3, excentric hypertrophy, the dilatation of the cavity of the body by retention of the secretions. The neck, too, is sometimes irritated, secreting mucus, with red and eroded borders, half opened orifice and unequal

¹ Scanzoni, *op. cit.*, p. 86.

² Picard (*op. cit.*) has two woodcuts of two anatomical preparations of flexions rendered irreducible by membranous adhesions to the neighbouring parts: an antelexion with utero-vesical peritoneal bands, and a retroflexion with utero-rectal membranous adhesions.

lips, the anterior shorter and smaller than the posterior in retroflexion (Sommer, West), the posterior less in antelexion; in short, the thickest lip is the one corresponding to the flexion.

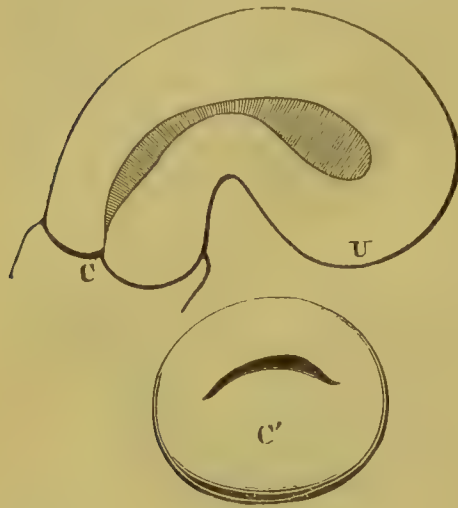


FIG. 275.—Retroflexion in the second degree: projecting spur, partial hypertrophy of the posterior lip of the cervix. No peri-uterine alteration.

As to the difference in frequency and gravity latero-flexions, which seem to coincide with a shortening of one of the broad ligaments are excessively rare; retroflexion is frequent in the adult after delivery and even in the aged; I have also seen cases occurring in young girls and in sterile married women; flexion of the cervix is common in youth at the time of puberty; but antelexion, which is almost the only one seen in childhood, is on that account the most common of all. At the same time antelexion is never so marked as retroflexion; for there is nothing behind to check prolapsus of the body, whilst in front it is limited by the bladder, and on the sides

by the lateral ligaments (broad ligaments).

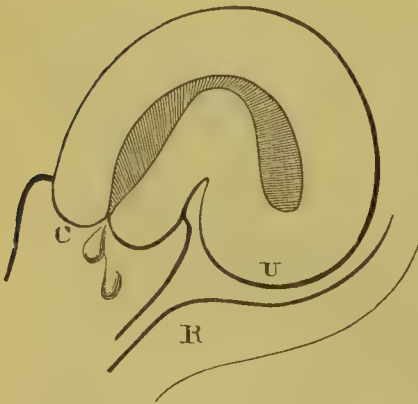


FIG. 276.—Retroflexion in the third degree, without hypertrophy: projecting spur. Muco-purulent uterine leucorrhœa.

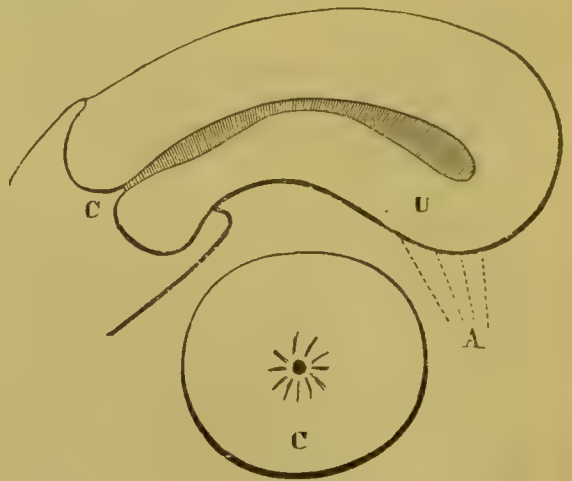


FIG. 277.—Retroflexion in the first degree with retroversion.—c, contraction and depression of the circular os; A, posterior neo-membranous utero-peritoneal adhesions.

Diagnosis—subjective signs.—It is difficult to decide as to the existence of a flexion from subjective phenomena alone, but not impossible. Evidently there are flexions which pass unnoticed, especially before puberty or marriage, in old age, or in a very large pelvis; but

the majority give rise to symptoms more or less marked in proportion to the sensitiveness of the patient, the narrowness of the pelvis, and the pathological nature and degree of the flexion.

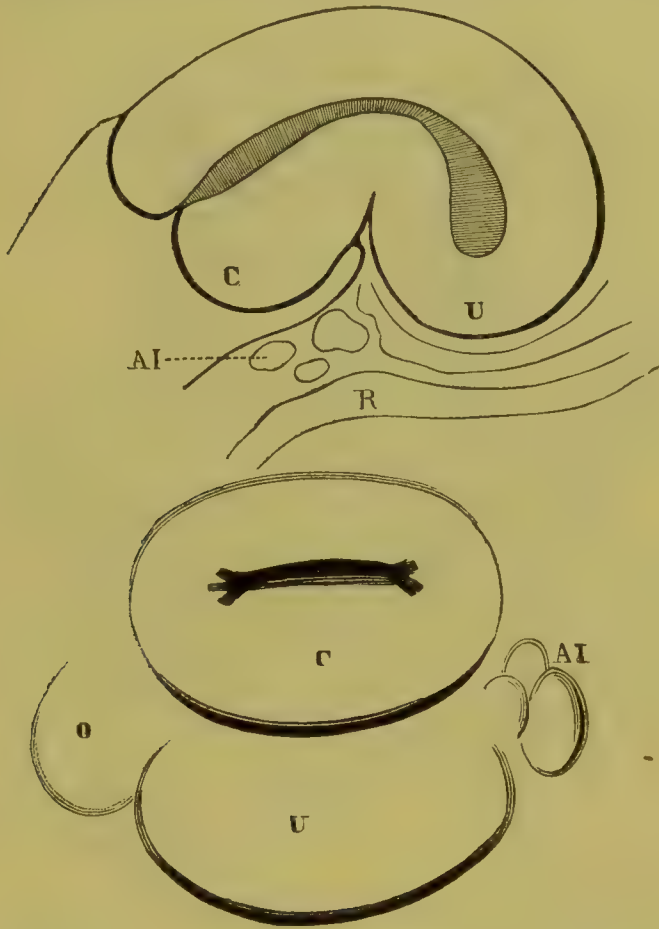


FIG. 278.—Retroflexion in the third degree, general hypertrophy of the uterus and partial hypertrophy of the posterior lip. o, descent of the right ovary; AI, adenitis and retro-uterine and latero-uterine inflammatory induration; U, projection of the fundus against the anterior wall of the rectum and the posterior wall of the vagina.

Amongst the *common symptoms* which have seemed to me the most frequent in flexions, as well as the most distinctive, are the following: purely mechanical dysmenorrhœa, sometimes slight, at other times excessive, the escape of the blood, especially of the first drops, being preceded and accompanied at every menstruation with violent uterine colics; menorrhagia, the difficulty of the sanguineous evacuation increasing the congestion, and the latter in its turn provoking hæmorrhage, the intensity and duration of which is sometimes alarming; pain in coitus, especially in cases of retroflexion complicated with uterine congestion, metritis, perimetritis, peritoneal adhesions, &c. Sterility is frequent,¹ though by no means a necessary consequence of

¹ According to Sims (op. cit., 237), two thirds of sterile women are affected with flexions or versions, the deviations forwards being more numerous in women whose sterility is natural, deviations backwards in women whose sterility is acquired.

flexions, for I have known women with flexions become pregnant; in some, gestation rectifies the displacement, whilst in others it aggravates it, especially in the case of retroflexion. Leucorrhœa also often

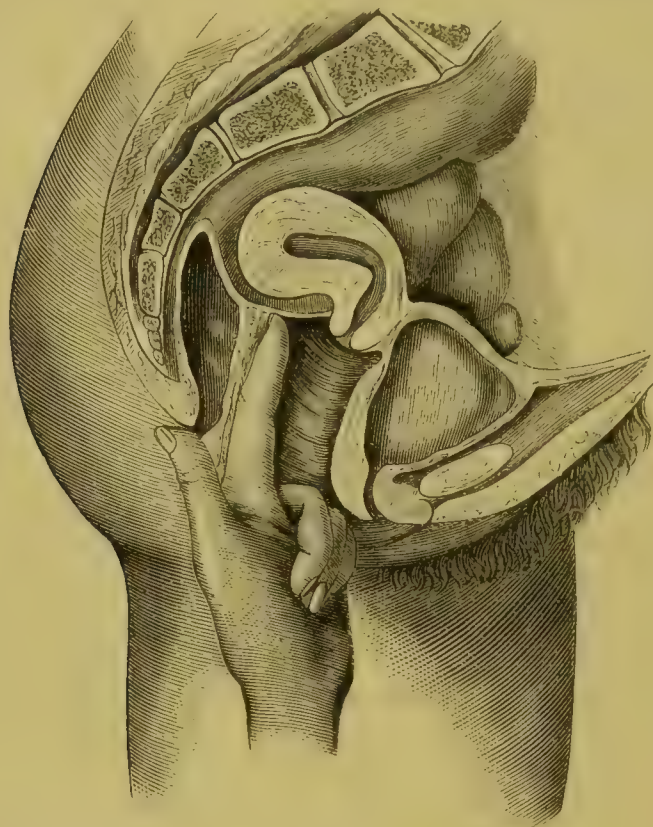


FIG. 279.—Diagnosis of retroflexion by the touch.

accompanies it and makes the flexion more painful, while it is made more persistent by the flexion which renders the discharge of the leucorrhœal mucus more difficult. I have had patients affected with flexions in whom leucorrhœa was the only subjective symptom, and who were cured of the leucorrhœa as well as of the flexion by repeated cauterisations of the uterine cavity after temporary replacement of the uterus.—Vesical and rectal disorders result from the pressure exercised on the bladder or rectum.—The weight, the dull pelvic pain, the lumbar dragging, are increased by walking and condemn a number of patients to absolute rest; I have known several who for ten or fifteen years were constantly confined to the sofa; in such cases, however, the symptoms of engorgement, congestion, metritis, and other organic alterations were so mingled with those of flexion as to make all differential diagnosis impossible.

Objective signs.—Vaginal and rectal touch associated with palpation usually suffice, except in very stout women, to allow of the uterus being seized, to determine the absence of the body above the isthmus and to give an idea of the new form and of the degree of inclination of

the organ. Whilst the hand pressed on the hypogastrium cannot find the body of the uterus on a level with the brim, as in the normal condition, the finger introduced into the vagina feels a solid round tumour behind or in front of the neck and projecting beyond it, which is the uterine fundus, but which may be mistaken for the pregnant womb or for a fibroid.

The speculum is of little use, except in cases of flexion of the neck, where examination by means of Sims's speculum decides the degree of the flexion, the form, position and dimensions of the orifice, as well as the

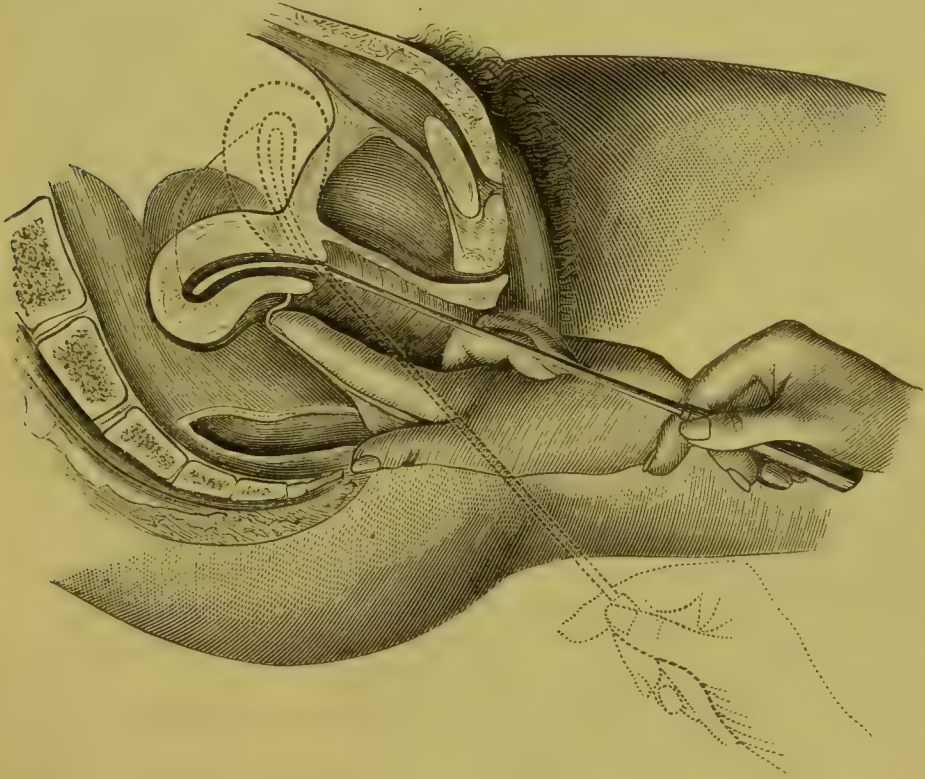


FIG. 280.—Diagnosis and reduction of retroflexion by the sound.

various complications, the coexistence of which it is so important to know in order to establish the indications of treatment. As to the use of the sound, in spite of what Scanzoni¹ says, it is indispensable, although an experienced physician can diagnose a flexion without it. Not only is it the only means of diagnosis in doubtful cases, but it enlightens us as to the direction, seat, degree and reducibility of the flexion, the absence of peritoneal adhesions, the coexistence of a torsion of the body on the neck, the irritability of the mucous membrane and of the *os internum*, the coexistence of endometritis, &c. I have seen errors of diagnosis because this means had been neglected. Some patients are so sensitive as to necessitate the administration of chloroform before having recourse to this means of investigation.

Treatment.—Slight flexions without complications are not serious,

¹ Op. cit., p. 29.

and ante flexion less so than retro flexion. Flexions complicated either by metritis or by peritoneal adhesions are very serious. In such cases they not only almost always produce sterility but may confine the patient to bed or to the sofa. Therefore, in spite of the insufficiency of our means of treatment, flexions should be submitted to a rational treatment, in the treble view of destroying complications, rendering them tolerable, and of favouring the natural processes which, in the majority of painful flexions, give us reason to trust in the continuity of the reduction and the permanence of cure.

The first indication to fulfil consists in subduing the complications and reducing the flexion to its greatest degree of simplicity; very often the complications and the flexion must be treated alternately and almost simultaneously. From this point of view it is evident that we have but a feeble influence on complications such as long-standing peritoneal adhesions; whilst, on the contrary, we can get a considerable hold upon uterine and peri-uterine inflammation, upon congestion, engorgement, and the tumefaction and softening which characterise defective retrograde evolution after labour; but even as to the former, we must never despair of modifying them, nor of obtaining a cure in the course of time from therapeutic agency and from the favorable intervention of physiological function. For instance, a pregnancy may occur and overcome adhesions which have seemed incurable. Anti-phlogistics, resolvents in the form of rectal injections of an iodide solution, or of mercurial ointment, purgatives, repeated laxatives, blisters, alteratives, various mineral waters, or hydropathy, may, according to the case, fulfil this first indication. Sometimes we must limit ourselves to the use of these means and to supporting the uterus and perinæum by a hypogastric belt or perinæal bandage. When, on the contrary, these complications do not exist or when they have disappeared the flexion may be acted on directly.

Reduction and retention are effected by local means aided by general treatment which we shall review.

I. In *reducing* flexions we make use of the hands or of the sound, or of both. The hand can effect little in the case of ante flexion; but in retro flexion, one or two fingers introduced into the vagina or rectum can, by pushing the fundus towards the brim (while the genupectoral attitude is assumed), easily manage to restore the longitudinal axis of the uterus to its normal direction, even in cases of pregnancy, unless the organ be wedged into the pelvis. I have recently reduced a retro flexion in a pregnant woman in the fourth month; the body of the uterus was fixed in the cavity; the cervix, though not deviated, seemed to have descended, and its anterior segment compressed the urethral canal, causing retention of urine for forty-eight hours; after having catheterised with difficulty, and having drawn four quarts of urine, I succeeded in replacing the organ.

The use of the sound is indispensable except in cases of possible pregnancy; it should be introduced with great caution for fear of perforating the softened uterus; but without this instrument reduction would sometimes be impossible. After having penetrated into the

cervix, we try to pass the contraction corresponding to the seat of the flexion, taking care to turn the curve of the sound to the side of the uterine curve, and only to depress or raise the handle of the instrument in proportion as the point penetrates without resistance, and as much as possible without pain, into the cavity of the body, after which by giving a different direction to the handle and turning the curve of the instrument in an opposite direction from that of the flexion the organ may be gradually straightened. In cases where excessive softening of the uterine tissue or the resistance of recent peritoneal adhesions are to be feared, the use of the sound should be associated with hypogastric palpation, or with the catheter in ante flexion, and vaginal or rectal touch in retro flexion.

II. *To maintain reduction* mechanical means may be used, or means intended to modify the vitality and texture of the uterus.

1. *Mechanical means* may be divided into two classes according to whether they are applied externally or internally.

The *external* or *extra-uterine* means are: tampons introduced into the rectum above the sphincter as proposed by Huguier¹ for retro flexion; often too painful to be borne. A tampon of cotton saturated with glycerine applied either behind the cervix or before and below it after reduction. Vaginal pessaries, whether free or retained, ought always to be much more raised on one side than on the other so as to prevent the descent of the fundus before or behind, according to the side on which this eminence is placed, and so maintain the reduction: amongst these pessaries the best are the triangular pessary of Simpson and Priestley, Simpson's stem pessary, that of Kennedy (of Liverpool), which is copied from that of Hervez de Chégoin. Sponges or pessaries (those of Hodge or Graily Hewitt) pushing back the cervix, so as to prevent this organ from resuming its false position and the body from falling forwards again. Lastly, hypogastric or pelvic belts either simple or with an anterior or posterior plate, alone or associated with a pad and perinæal bandage; or the latter bandage may be used alone in cases where hypogastric pressure cannot be borne. It is very seldom that the hypogastric belt is not useful in cases of ante flexion; but it is painful and often intolerable in retro flexion; the perinæal pad, on the contrary, alone or supporting a tampon saturated with glycerine or an air pessary with unequal borders is of great service.

Intra-uterine pessaries² recommended by Simpson, Kiwisch and

¹ See p. 192.

² The use of intra-uterine stems or the mechanical treatment of flexions is recommended in Germany by Martin (*Die Neigungen und Beugungen des Uterus*. Berlin, 1870), Winkel (*Behandlung der Flexionen des Uterus mit intra-uterinen Elevatoren*, 1872), Schultze (*Archiv f. Gynaekologie*, Bd. iv, 1872), Amann (*Zur mechanisch. Behandlung der Versionen und Flexionen des Uterus*. Munich, 1874), Schröder (*Handbuch der Krankheiten der weiblichen Geschlechtsorgane*, 1874); in Sweden by Eklund (*De l'Étiolog. et du trait. des rétrof. utér.* Stockholm, 1875); in England by G. Hewitt (*Obstetric. Transact.*, vol. x, 1869), Williams (*Ibid.*, 1874), Barnes (*Diseases of Women*, 1876); in America by Thomas (*Practical Treatise of Diseases of Women*, 1876); in

Valleix have been long abandoned in France. I am as ready as any one to admit the danger of intra-uterine pessaries in some cases. I have seen a patient, who seemed to tolerate one of these stems for twenty-four hours, die of metro-peritonitis in spite of the most energetic and judicious antiphlogistic treatment. Patients have returned to me from Valleix uncured of their maladies, whom he thought were cured, as Kiwisch's patients went to Scanzoni. Nevertheless, I am more than ever convinced that the use of such instruments should not be proscribed. Their action is not merely mechanical; it excites uterine contractility owing to the natural reaction of any physical impression on our organs. This excitement, however, becomes injurious when great irritability disposes the uterus to become inflamed, or when inflammation has already attacked it or the neighbouring organs. Therefore uterine or peri-uterine inflammation is always a contraindication to their use.

In cases where these contraindications do not exist these stems may be used, but loose means of retention should always be preferred to those of absolute immobilisation, which unfortunately were formerly used. The stem, whilst keeping both parts of the uterus straightened, and being itself held sufficiently in place by its bulb and a tampon saturated with glycerine, should be left at liberty to oscillate in various directions with the womb according to the movements of the patient, instead of exposing the uterus to injury from every movement of the body, as would be the case were the stem immovably fixed.



FIG. 281. — Galvanic stem kept in place by a tampon saturated with glycerine in a retroflexed uterus previously reduced.

I have used this means of treatment in retroflexion since the stem was first introduced into France, and have found it most successful when the uterus is too flexible to be retained in position by any other means.

In describing the treatment of each special flexion we shall determine what agents of reduction and retention should be specially employed.

2. The *local and general modifications* suitable for favouring and maintaining retention are: posture, hydropathy, tonics, ergot, electricity, cauterisation, &c.

Posture is important especially in recent flexions: it allows the tumefaction of the organ to subside, it prevents congestion from increasing, it helps resolution, it prevents the formation of vicious adhesions.

In cases of ante flexion patients should lie on the back, with the pelvis raised and the limbs flexed. In retroflexion they should lie on the stomach.—*Hydropathy*, general rather than local, or as regards the latter cold sitz-baths, vaginal irrigations, the douche on the loins and sides, will aid in

Russia by Tarnowsky (M^e Gontcharoff, *Flexions utérines au point de vue de leur traitement*. Paris, 1877), &c.

raising the tone of the organ and in exciting uterine contractility.—*Tonics*, including iron, mineral waters such as those of Lamalou, sea bathing, &c., act in the same direction as hydropathy.

There are, however, three local modifications superior to the preceding if they answer to all that they appear to promise; these are, ergot, electricity and cauterisation.—Ergot is an excellent means of stimulating the contractility of the uterus when defective, especially in retroflexion. This repeated provocation of muscular contraction excites a hypertrophic tendency in this tissue, which is very useful in overcoming the atrophy which has its seat at the point of flexion and in all the corresponding wall. Considerable results are obtained by giving three or four grains every day for a month, resting at the monthly period.—*Electricity* has been employed by Fano¹ to give contractile power to the side of the uterus opposite the angle of flexion, sufficient to shorten the fibres and so straighten the uterus. It is evident that the action of electricity in this case may also affect the superficial muscular layer extending into the broad, utero-lumbar and utero-pubic ligaments. One of the poles should be placed on the cervix or in the uterine cavity or on the lip of the cervix corresponding to the side of the womb opposite the angle of flexion, the other pole on the hypogastrium, the inguinal regions, sides or loins, according to the direction of the curve. In some cases this means seems to me to have helped the others.—*Cauterisation*, especially when deep, so as to destroy a part of the cervical tissue, as recommended by Grenet,² may in some cases be most useful.

Following the example of Amussat and Bonnet, since 1852 I have cauterised the neck very high up, as well as the vagino-uterine *cul-de-sac* on the side opposite the deviation, not only in versions but in flexions. This operation has been so successful with me that I have not feared to repeat it several times in the same patient. As for flexions in particular, while accepting Grenet's explanation that cauterisation produces a cicatricial tissue which shortens the fibres on the side of the uterus to which it is applied, not forgetting the modification which this operation never fails to effect in the uterine tissue, and which manifests itself by a great tendency to resolution of the engorged parts, I think that even deep cauterisation of the cervix on a level with the *cul-de-sac* of the side opposite the flexion is especially useful in flexion of the cervix, less so in that of the isthmus, and still less in that of the body.

2. *Flexions in particular*

By proceeding to an analytical study of each flexion the differences in the nature, characters, symptoms and treatment of each can be brought into relief. In the first place we observe that flexions are not indifferent, there being some which cause great suffering in the absence of all complications.—We also discover that there are special symptoms

¹ *Union médicale*, 1859, and Vidal de Cassis, *Pathologie externe*, v, 384. Paris, 1861.

² *Gazette des hôpitaux*, Nos. 54 to 58, May, 1865.

characteristic of each kind of flexion sufficient to lead us to suspect if not to diagnose it. It is not only the direction of the flexion which varies, but the cause and the nature of the alterations which produce the change in the form of the uterus in both cases. We therefore naturally conclude that the treatment of these flexions ought to differ according to the nature which characterises the fundamental alterations in each. This treatment, in place of being merely palliative, is in many cases curative, and being founded on real knowledge of the anatomical nature of the malady, when wisely applied never fails to give real relief proportioned to the extent of the reduction and the permanence of the retention. Emmet, in a recent paper,¹ gives the statistics of all the cases he has had. In 345 flexions there were 182 of the cervix, the others of the body, which gives 53 per cent. for flexions of the cervix, 47 per cent. for the body; and among the latter he counted 91 anteflexions or 56 per cent., 29 retroflexions or 18 per cent. (one third anteflexions, whilst as regards versions, retroversion is as frequent as anteversion), 43 latero-flexions or 26 per cent. (which seems to me an exaggeration), twice as many to the left as to the right.

a. Flexions of the Cervix

These are rarely found in women who have been pregnant, but often in girls, especially at puberty. Dysmenorrhœa and sterility reveal their existence: the duration of menstruation in such cases would be less than the average. The medium age of those affected is twenty-five years, which is earlier than that of other flexions.

They seem to originate at puberty from unequal development of the body and neck. When the body is anteverted, which is to some extent the normal congenital position, the neck cannot be considerably developed in length without meeting the posterior vaginal wall which deviates it, flexes it, and forces it to develop itself in the direction which offers the least resistance, *i. e.* in the axis of the vagina, and as this axis forms an open angle in front with the axis of the uterus, especially when this organ is curved forwards, anteflexion of the cervix necessarily follows. Such, according to Emmet, is the cause of flexions of the cervix and of their frequency; it will be seen that this flexion is only the consequence of flexion of the body in the same direction which gives the horse-shoe form to the uterus. This continuity between the curve of the body and that of the neck is probably the reason why other gynecologists have not given the same importance to flexions of the cervix, some attributing to the uterus as a whole the flexion seated in the supra-vaginal portion of the cervix, others forgetting that when the direction of the cervix is the same as that of the vaginal axis, it necessarily follows that this organ is flexed forwards, since its orifice ought normally to look towards the posterior vaginal wall. There are certainly a great many cases

¹ The etiology of uterine flexures, with proper mode of treatment indicated, *Transactions of the American Gynecological Society*, p. 48, vol. i. Boston, 1877.

described and treated as mechanical dysmenorrhœa which ought to have been classed as flexions of the cervix: the only question is to



FIG. 282.—Anteflexion of a conical cervix with narrow os (after Barnes).

determine whether this alteration in the form of the neck is the dominant element of this complex pathological state, or if it is not rather the congenitally narrow os, the contraction of the sphincter, combined with retraction of the fibres of the anterior segment, which causes the inequality between the two walls and the curvature with the anterior concavity, so well understood by Cusco. It is certain that analogous means of treatment are applied to the malady described in most gynecological works as mechanical dysmenorrhœa, as in Emmet's paper to flexion of the cervix, and there is no doubt that flexion of the cervix rarely exists without narrow and conical os, anteflexion of the body, contraction of the external sphincter, of the muscular fibres of the anterior segment and of the utero-sacral ligaments, in short, without the concurrence of the majority of the conditions belonging to anteflexion, and especially to pathological anteflexion.

Diagnosis.—Flexion of the cervix, easily recognised by the long neck lying in the axis of the vagina, is seen in girls at puberty or in young married women, accompanied by dysmenorrhœa and sterility and often by anteflexion of the body and elevation of the organ. The pain shows itself chiefly at the commencement of the menstrual period; it is less severe in virgins than in married women; in the latter it is accompanied by hypertrophy and diseases of the body in addition to anteflexion of the latter. If conception does not take place during the first year of married life, the chances of its occurring later are greatly diminished, flexion always having a tendency to increase, as

well as the complications which accompany it, antelexion of the body, diseases of this organ, the transmission of irritation to the ovary, &c.

The treatment is exclusively surgical. We must, however, assure ourselves beforehand that there is neither uterine nor peri-uterine inflammation. After all it is not very often indicated; for Emmet admits that he has not met with one serious enough to be operated on more frequently than once a month.

This treatment consists in the division of the cervix proposed by Simpson, performed by him on the lateral parts of the orifice, by Marion Sims on the posterior lip by means of his bistoury with a short revolving blade, and by Emmet on the same lip (median incision), but by means of strong bent scissors, which operate more quickly and are less apt to cause hæmorrhage than the bistoury. After having made the median incision, the borders may be rounded so as to form a concave opening of the whole, at the base of which if necessary the canal may be divided by means of the bistoury, or it may be dilated by

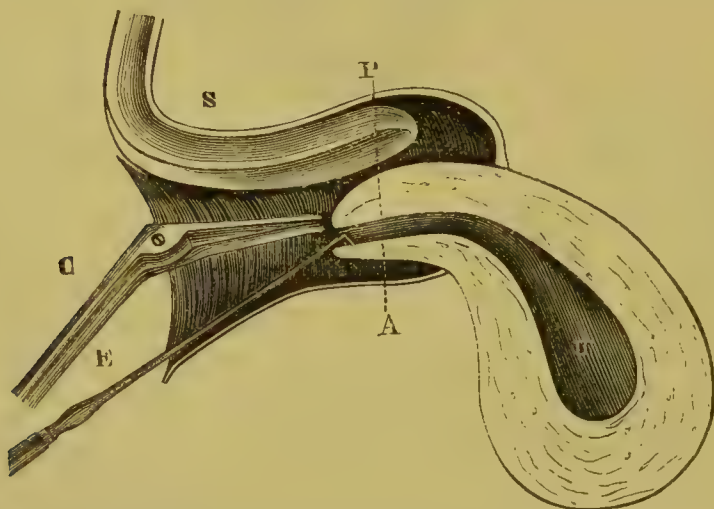


FIG. 283.—Median incision of the posterior lip, treatment of flexion of the cervix; s, speculum; U, uterus; A, anterior lip; P, posterior lip; E, tenaculum hook inserted into the anterior lip to draw the uterus near the operator; c, scissors to divide the posterior lip P.

the repeated introduction of sponge tents of increasing size, a method of treatment which rectifies and widens the cervico-uterine canal sufficiently to cure dysmenorrhœa and to facilitate conception, especially if coitus, in place of being performed in the ordinary way is performed *more bestiarum*; in this posture the penis and semen are more sure of reaching the posterior utero-vaginal *cul-de-sac* on a level with the opening made in the posterior lip by median incision, resection of the angles and borders, and dilatation of the rest of the canal. Sometimes, as seen in Figs. 284 and 285, a portion of the too long posterior lip should be excised (Fig. 284, 1) after making the median excision of this lip (Fig. 285, 2), which is the only way of ensuring the direct penetration of the semen into the uterine cavity. It will

be seen that the operation has to be varied according to the extent of the flexion, the degree of the curve, the length and volume of the



FIG. 284.—1. Portion of the posterior lip which is excised in case of extreme flexion of the cervix.



FIG. 285.—2. Portion of the posterior lip to be divided in the centre after excision of portion 1.

flexed portion, and the complications, such as tumours, &c. When, however, the principle is understood, it is easy to apply it to individual cases.

b. Antelexions of the Body

Anteflexion may be either congenital or acquired, limited to a segment of the body of the organ or extended to the neighbouring parts, and particularly to the suspensory ligaments.

a. Congenital physiological anteflexion.—This is an exaggeration of the usual conditions of form and inclination of the uterus in the foetus, in the child and young girl at puberty, often even in the adult nullipara. If the relative excess of increase which the anterior segment should take at puberty to compensate for its original shortness does not occur the temporary congenital anteflexion may become a permanent one: in this case it may be said to be due to imperfect development of the anterior wall. At other times, in place of being developed this wall atrophies, thereby exaggerating the anteflexion in place of correcting it. At other times the production of this physiological anteflexion is much more complicated: under the influence of the irritation which congenital anteflexion produces in the organ, of the obstacle placed in the way of the accomplishment of the functions, especially of menstruation, &c., contraction is produced in the unstriped muscular fibres of this segment of the uterus, shortening them and finally causing retraction, not only in the fibres of the organ but in those arising from it which are inserted into the sacro-lumbar vertebræ; this produces a direct exaggeration of the anteriorly concave curve, and an indirect increase of this same curve by bringing the upper portion of the neck nearer the sacro-vertebral angle, and consequently a more marked aggravation of an anteflexion originally congenital, produced in fact by a purely physiological cause.

b. Pathological antelexion.—This is the name given by Schultze¹ to acquired antellexion; it may be produced by several causes, for if

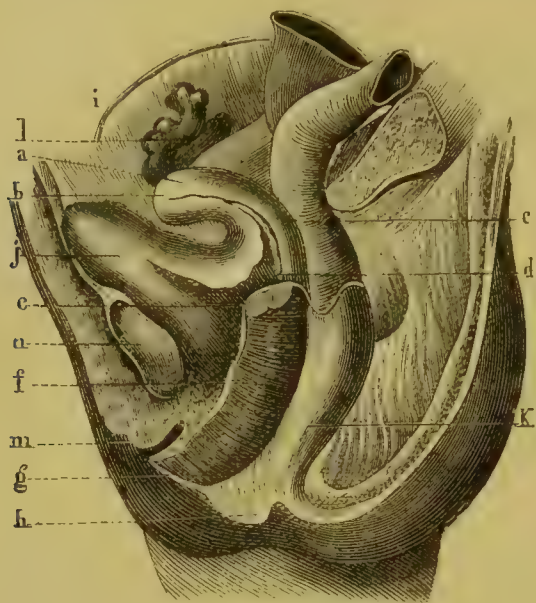


FIG. 286.—Usual antelexion of the uterus in the fœtus and child, origin of congenital physiological antelexion (after Boullard).

it always arises more or less from peri-uterine inflammation, it is by various consecutive phenomena that it does so. Sometimes it is produced directly from peri-uterine inflammation or true peritonitis, by the formation of false membranes uniting the fundus of the bladder to that of the uterus, the posterior surface of the one with the anterior surface of the other. Sometimes it is produced indirectly, the peri-uterine inflammation having its seat in the peritoneum or in the connective tissue lining it; it is then propagated to Douglas's ligaments, and even where these ligaments are cured as well as the cellular tissue and surface of the pelvic peritoneum there still remains a cicatricial retraction, or at least a contraction and shortening of these ligaments, bringing the cervico-uterine isthmus near the promontory and anterior surface of the sacrum. This, however, cannot be effected without raising the isthmus and removing it from the fundus and cervix, without making the organ project behind on a level with the isthmus while concave in front, especially if the fundus is retained by vesical adhesions and the neck by a hypertrophy frequently co-existing with these alterations. This antelexion, which is rightly called pathological, is still less reducible than the former, but it is characterised by histological alterations of the same nature, contraction, retraction of the suspensory ligaments and induration of the uterus itself: partial retraction of the broad ligaments may even be added, inclining the fundus forwards, whilst the isthmus is raised behind; there may also

¹ Zur Frage von der pathologischen Antelexionen der Gebärmutter, *Archiv für Gynecol.*, Bd. ix, S. 453. Berlin, 1875.

be inodular retraction of the connective tissue as a consequence of cellulitis, in addition to the contraction of the suspensory and broad

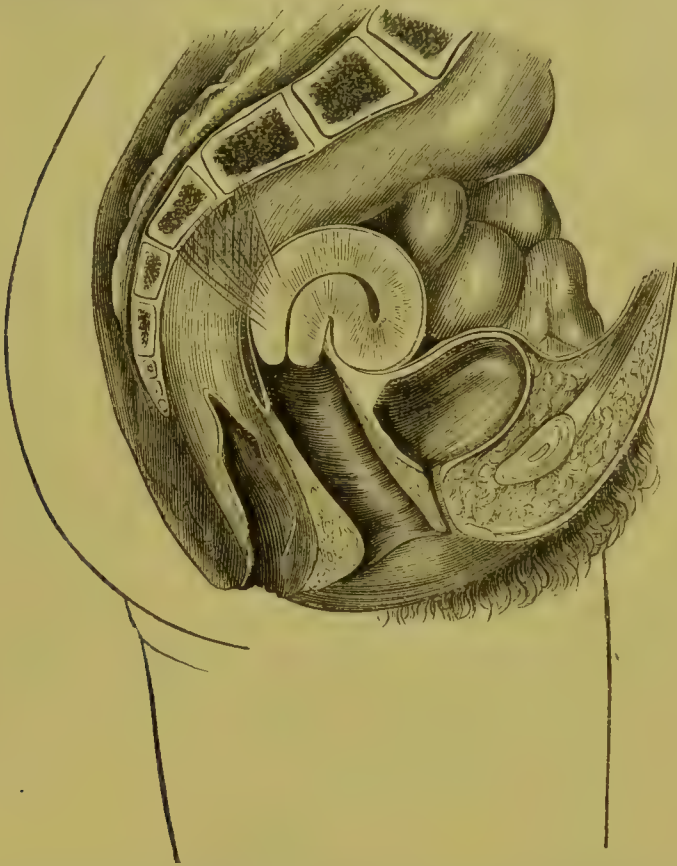


FIG. 287.—Pathological anteversion: shortening of ligaments of Douglas, ascent of the cervix, pressure of the fundus on the posterior wall of the bladder.

ligaments and tending to flex, contract and indurate the organ by curving it forwards on itself.

Treatment.—The chief indications are to subdue the inflammation and then treat the consequences, especially muscular contraction, for this contraction is the principal element of the malady. Prolonged general baths either emollient or alkaline, with vaginal injections all the time, Vichy waters externally and internally, followed by hydrotherapy, repeated mild laxatives, constant poultices on the abdomen covered with oil silk, resolvent rectal injections of mercury and belladonna ointment, followed by small enemata of iodide of potassium, bromide in large doses internally, sponge tents covered with belladonna ointment, kept in place by tampons saturated with glycerine to moisten the mucous membrane, cause an abundant secretion, and soften the uterine tissue; such are the chief means employed to fulfil the indications: antiphlogistics, resolvents, antispasmodics, laxatives. When we have to do with hard and contracted tissues, we must have recourse to all that can soften and dilate them; these are not the cases for intra-uterine stems, hardly even for sponge tents; but the

belladonna with which they are covered and the glycerine that is added, by dilating the cervico-uterine canal and softening the tissues, greatly compensate for the irritation and contractility produced.

Lastly, patients are often relieved and walking is facilitated by the use of hypogastric belts (see Figs. 150, 151), which remove the weight of the abdominal viscera from the anteflexed uterus.

c. Latero-flexions of the Body

These can only arise from anteflexions, by limitation of the spasmodic or cicatricial retraction of one of the suspensory or broad ligaments or, it may be, one of the round ligaments. It is hardly possible to approach the description of these incurvations without entering on the field of hypothesis; in fact everything is hypothetical with regard to them. The cause which produces them as well as the seat of the pathological alterations, the very existence indeed of latero-flexion, is doubtful. Latero-version is comprehensible, but latero-flexion is very different, and as for the supposed cases which have occurred, we must remember how easy it is to confound this diagnosis with that of the *uterus unicornis*, which has sometimes been found to the right and sometimes to the left (see Fig. 264). If such a case really occurred, as the cause of the evil must have its seat in the ligaments, and as this cause must be a retraction, either congenital or consecutive to an inflammation (for a softening and relaxation of the tissues could not force the uterus to incline in one direction rather than another), I would institute the treatment I have described as applicable to anteflexion of the body.

d. Torsion of the Uterus on itself, and Torsion of the Body on the Neck

The cause must be due to retraction of a layer of oblique fibres of the uterus, or of ligamentary fibres variously associated together. We have seen that the simultaneous retraction of the two ligaments of Douglas consecutive to posterior perimetritis or parametritis, by raising the upper portion of the cervix towards the sacrum, produced an anteflexion (flexion with the concavity looking forwards), rightly called pathological by Schultze. It is evident that if the simultaneous retraction of the two broad ligaments is added to that of the utero-sacral ligaments, and if we suppose that that of the round ligaments is also associated, the fundus of the organ will be more and more inclined forwards and the flexion increased. If, however, only one of the utero-sacral is retracted anteflexion will be more marked on one side than on the other, and the upper part of the neck, whilst drawn towards the sacrum by the contracted ligament of Douglas, will also be more drawn towards this side than to the other, giving to the neck an inclination resulting in the oblique in place of the transverse direction of the os. If the broad and round ligaments of the opposite side are contracted at the same time, this rotation, this obliquity of the *os uterinum*, this torsion of the whole of the uterus will only be increased. If, on the contrary, contraction of all the ligaments takes

place on the same side there will be no longer torsion, inclination, obliquity, but latero-position associated with ante flexion. Lastly, whether the cervix be drawn towards the sacrum by the simultaneous contraction of both utero-sacral ligaments, or whether only one of the broad or round ligaments is contracted, there will be torsion of the body on the neck at the isthmus, torsion which in certain cases will be associated with that already produced by contraction of the fibres, and which gives an oblique direction to the anterior surface of the body in relation to that of the neck (see Fig. 271, p. 411).

It is important to diagnose these torsions: the obliquity of the os, the difficulty of passing the sound, the inclination (Fig. 270) and spiral movement required to make it penetrate, the discovery of hard, stretched, contracted bundles of fibres behind or at the sides of the uterus, will lead to a diagnosis and to a suitable treatment being instituted to overcome the sterility, which is the usual consequence of these torsions. Treatment is the same as for ante flexion, for contraction of the tissues is the principal element in both cases. Sometimes ignipuncture may be indicated on a limited point of the uterus or on the fibrous layer adhering to it and containing one of its ligamentous bundles, in order to produce a limited inflammation, a spasmodic contraction of this bundle, capable of counterbalancing the opposing contraction which contributes most to produce or keep up the torsion. Antiphlogistics, resolvers (alkaline waters and hydropathy) and

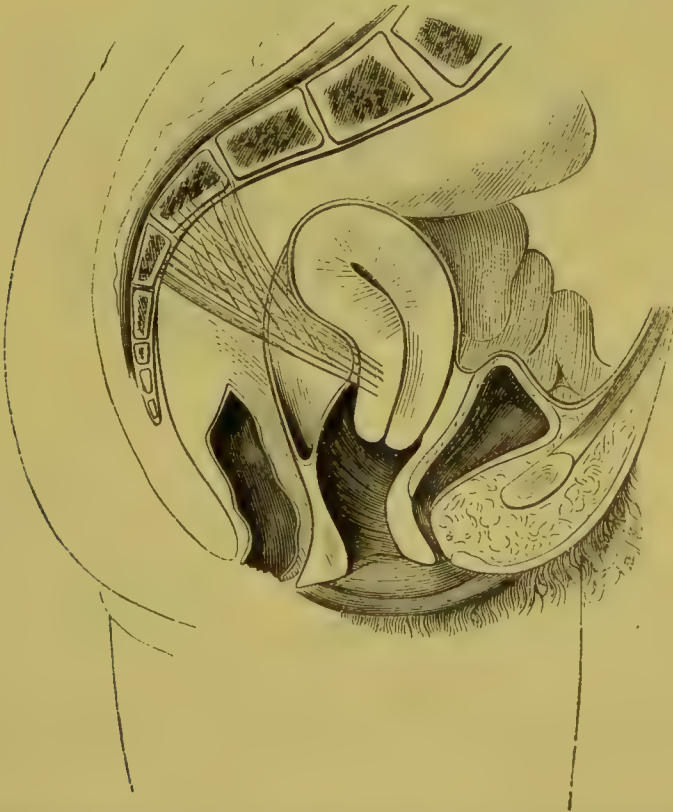


FIG. 288.—Retroflexion in the first degree: the cervix low, the fundus above the ligaments of Douglas.

repeated dilatations with sponge tents associated with belladonna ointment, glycerine, &c., are the principal means of treatment.

e. Retroflexion of the Uterus.

We now enter a field of histological alteration totally different, if not diametrically opposed, to all the preceding. Till now, the only direct agents of partial deviations and incurvations which we have met with are retractions of tissue and shortening of the muscular fibres and ligaments. We shall now have to do with elongation, distension, softening and rupture. In fact retroflexion is in every respect the opposite of ante flexion. Not only is the organ curved in a different direction (the concavity being behind in place of in front) but it is hardly ever congenital, but always developed as the result of a morbid alteration, this being the case even in congenital retroflexion; retroversion is not uncommon amongst girls and nullipara; congenital retroflexion, on

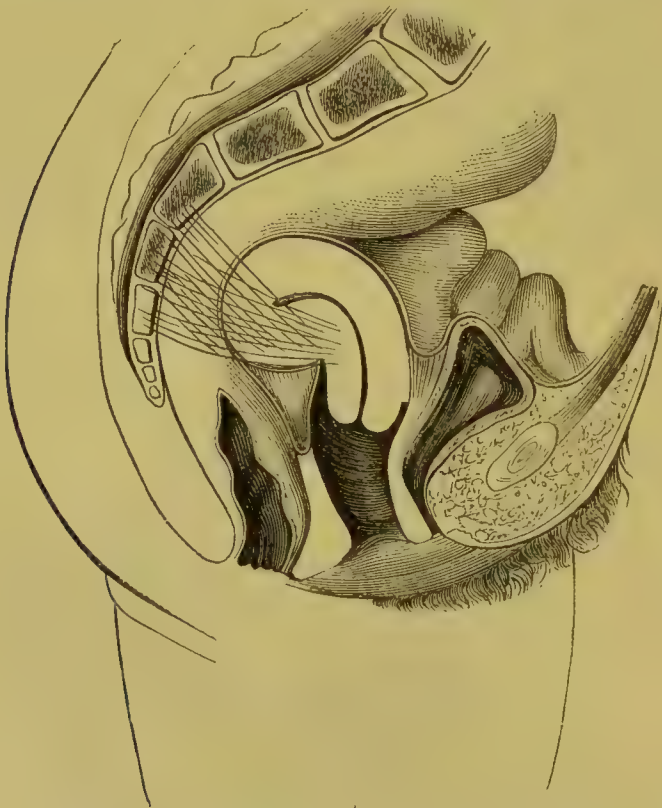


FIG. 289.—Retroflexion in the second degree: the cervix low, the fundus on a level with the ligaments of Douglas.

the other hand, is exceedingly rare;¹ the acquired form is very common in multiparæ and is almost always the result of labour or abortion; it is never caused by contraction, but is almost always

¹ Grenser, "Die Rückwärtslagerungen der Gebärmutter bei Jungfrauen und Nulliparen, nebst Bemerkungen zur Retroflexio uteri congenitalis," in *Archiv f. Gynaekol.*, Bd. xi, Heft 1. Berlin, 1877.

characterised by thinness, softening, distension and even rupture of the muscular fibres of the uterus and its ligaments; it rarely coincides with elevation of the womb, usually on the contrary with prolapsus; the fundus reaches a much greater degree of prolapsus behind than that which it acquires in front in ante flexion.

There are at least three degrees, according to whether the fundus is above, on a level with, or below the ligaments of Douglas and the cer-



FIG. 290.—Retroflexion in the third degree: the cervix low and directed forwards, the fundus below the ligaments of Douglas.

vix; in the first degree the fundus is above the ligaments of Douglas and the cervix; in the second degree it is on a level with them; in the third degree it is below, and the whole organ is at the same time more and more lowered by the extension and distension of these ligaments. The day after delivery when the previously retroflexed uterus falls down into the pouch of Douglas, it may fall so low as to be felt filling this space through the perinæum, the anus, the lower part of the rectum and the posterior portion of the vagina. This may be called a fourth degree peculiar to the puerperal state.

The uterus often remains prolapsed and retroflexed for a long time without any considerable alteration being produced in its tissue; but sometimes alterations are manifested very early, proving the necessity of hastening reduction and retention, lest, by delaying too long, they

become impossible. In Figs. 292 and 293 borrowed from Graily Hewitt, retroflexion in the second degree is seen in which the cervico-uterine canal is maintained free in all its extent; and a retroflexion in the third degree where the canal is obstructed at one point by the

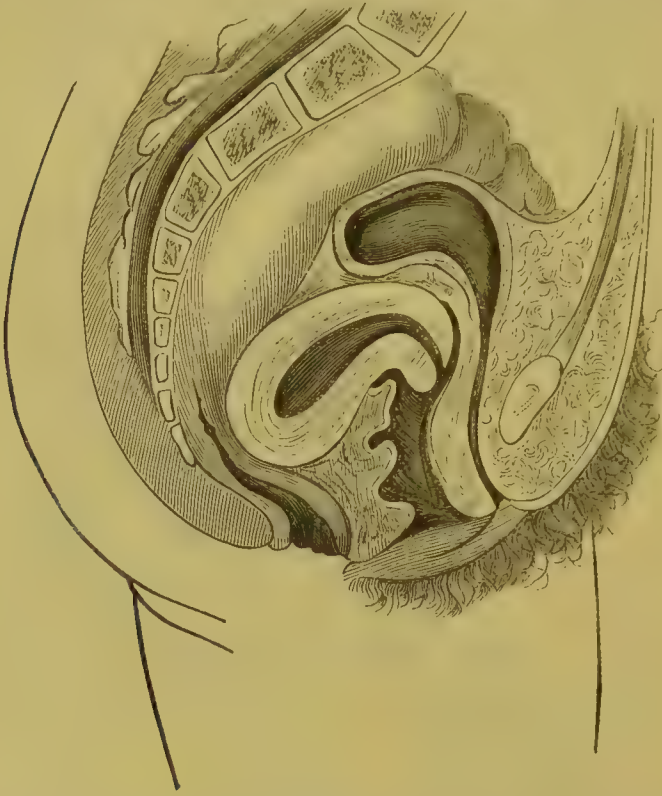


FIG. 291.—Retroflexion in the puerperal condition, carried to a still higher degree, the cervix being low and directed forwards, the fundus resting on the floor of the perinæum in the pouch of Douglas.



FIG. 292.—Retroflexion in the second degree, with persistence of the cervico-uterine canal (after Graily Hewitt).

meeting of the two walls. Lastly, in the preparation represented in Fig. 294 of long-standing retroflexion of the third degree is seen not only the occlusion but the obliteration of the cavity, by the adhesion of the mucous membrane of one wall with that of the other side, whilst alterations of this mucous membrane are revealed by the presence of small polypoid excrescences. There must have been sterility owing to these various alterations. In all these preparations the posterior lip is larger than the anterior.

We may also remark that the tissue of the organ is pale in place of being red from venous congestion, as is the case in the softening which characterises defective involution. The pale portion is anæmic owing to the presence of adipose globules of fatty degeneration, and of white globules, fibrils of laminar tissue, the result of fibro-muscular atrophy. In place of being dense and hard this tissue is soft, and is torn rather than cut by the bistoury; it is only after the retroflexion has existed for a long time that, notwithstanding the same white aspect, the tissue changes its nature and is formed of hard fibres of retractile tissue, some of which are elastic and no longer allow of the straightening of the organ.



FIG. 293.—Retroflexion in the third degree, with occlusion of the cervico-uterine canal by juxtaposition of the walls (after Graily Hewitt). In this figure, as in the preceding, the tissue of the organ is anemic and pale at the point of flexion.

Other alterations are not wanting which may precede the development of retroflexion or coexist with it, or at least with the softening and tumefaction characteristic of the defective involution which is its essential condition; or they may be produced in consequence of the hindrances placed in the way of the free exercise of the functions of the uterus, of impeded circulation, of the long duration of the retroflexion, &c. These alterations are pointed out in several of the rough drawings which I am in the habit of making in recording

cases, some of which I have given here; they are peritoneal adhesions of the fundus of the uterus with the extremity of the retro-vaginal



FIG. 294.—Extreme retroflexion, from nature. Middlesex Hospital museum, Barnes.

pouch of Douglas, associated with leucorrhœa, granulations, vaginal cysts, prolapsus of the ovary, adenitis or nuclei of chronic retro-

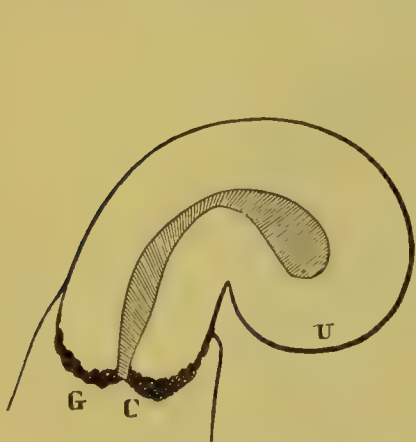


FIG. 295.—Retroflexion of the second degree, with bleeding granular cervix.



FIG. 296.—Retroflexion of the first degree, probably congenital: conicity with hypertrophic elongation of the cervix.

uterine inflammation, partial hypertrophy of one of the cervical lips, &c.

The *subjective symptoms* of uncomplicated retroflexion are: sacral pain at least nine times out of ten, pain at the anus, in the groins, sometimes at the umbilicus, with sensation of dragging of the navel towards the pelvis, especially in the dorsal decubitus, with nausea and stomachic dyspepsia as in the commencement of pregnancy, especially when the fundus of the uterus is large, very congested and very low.

The introduction of the enema pipe is often sufficient to produce nausea in such cases by coming in contact with the fundus through the rectal wall. There is also frequent desire to go to stool, accom-

panied by constipation and all its serious consequences, so vividly described by Barnes, frequent micturition, increase of all the pains

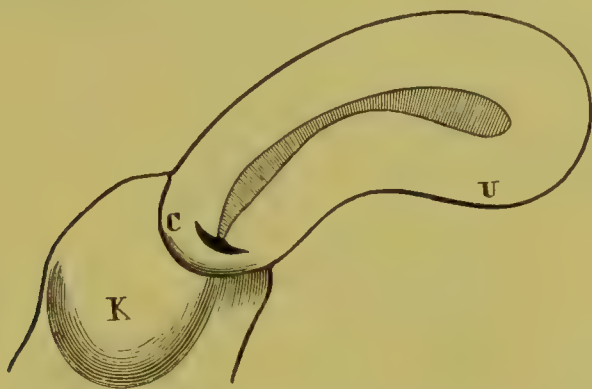


FIG. 297.—Retroflexion in the first degree: cyst at the extremity of the vagina.

after walking or exertion of any kind, even raising the arms or adjusting the hypogastric belt, &c.; it is usually impossible to accomplish any movement necessitating effort and causing compression of the uterus by the abdominal viscera. The dorsal decubitus does not give any relief, and most patients find out for themselves that the prone position is preferable.

The *objective symptoms* are easily discovered: vaginal touch practised when the patient is standing, and the same associated with palpation when she is lying, will disclose a tumour behind the cervix and continuous with it, the cervix being pushed forwards sometimes even against the pubis. When these signs are observed there is great probability of our having to do with a retroflexion. Nevertheless we may be mistaken, diagnosis being only certain after the sound has been used. This is necessary in order to ascertain whether there is a retroflexion, whether it is reducible, and if it is so as a whole, with more or less facility, more or less pain, &c. In trying to reduce no risk is run by using the sound, whilst one or two fingers of the other hand exercise pressure and raise the fundus, and the exactness of the diagnosis is greatly increased. It is also important to ascertain whether the ovaries have been dragged along with the prolapsed fundus, and if there is adenitis or retro- or latero-uterine inflammatory induration at the base of the broad ligaments, complications which are the source of important indications.

Treatment should be instituted as soon as possible in order to prevent alterations of organic tissue or peritoneal adhesions which might prevent reduction; although it must be admitted that, when these alterations do not exist from the beginning, there is less chance of their being developed later than is generally supposed. Reduction must be made possible by the simultaneous or previous cure of complications, such as leucorrhœa, uterine granulations, pelvic peritonitis, &c., as in ante-flexion. As a rule, neither inflammation nor retraction have to be taken into account; in fact there is no retraction, and as for inflammation, if well managed it will rather help to cure than increase the evil,

by giving to the uterus a rigidity which may prevent it from falling backwards. Lastly, the contractility of the uterine tissue and its liga-

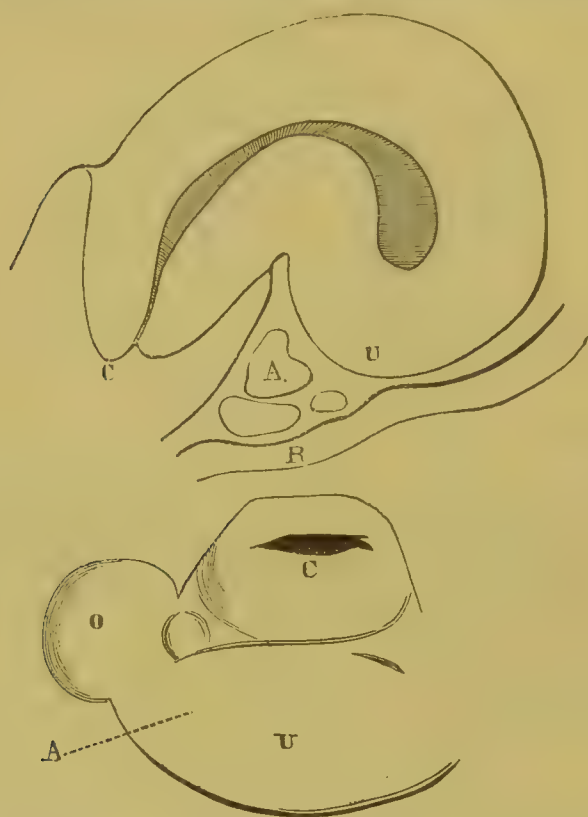


FIG. 298.—Retroflexion in the third degree, prominence of the anterior lip. U, considerable congestion of the fundus; O, prolapsus of the right ovary; A, inflammatory indurations and retro-uterine adenitis.

ments must be stimulated in order to produce this rigidity and retraction, which is the contrary indication from that of ante flexion.

1. In order to effect reduction the hands may be introduced simultaneously into the rectum and vagina, or one may be introduced into one of these organs and the other be applied to the hypogastrium; but it is best to combine the use of the sound with that of the fingers in the rectum or the posterior vaginal *cul-de-sac*. Reduction is facilitated by the genupectoral posture, although this is not indispensable; it often suffices to place the patient on her back if the sound is used. (See Fig. 128, p. 145.)

2. After the fundus has been raised and the cervix has been pushed back into the sacral cavity I introduce the galvanic stem pessary, keeping it in place by a tampon saturated in glycerine. The patient should then assume the ventral decubitus for a few hours. This application may be repeated twice a week. The intra-uterine stem is made in four sizes so as to suit all cases. If this is contra-indicated by leucorrhœa or endometritis, a sponge or plug of cotton wool saturated in tannin may replace it or my lever pessary with a cervical arch (see Fig. 177, p. 198), the arch being placed in front

of the cervix to keep it in the concavity of the sacrum, and to incline the fundus forwards, which is the best way of preventing it from falling back again. The patient should continue to adopt the ventral decubitus, sometimes remaining in it day and night, at any rate always at night, and to be sure that the uterus is in its normal direction it is well to teach the husband or nurse of the patient to introduce a small Fergusson's speculum into the posterior vaginal *cul-de-sac* every night at bedtime while the patient is in the genupectoral posture, and then to withdraw it very gently, inclining the external extremity as low as possible; in this way the atmospheric air is admitted into the vagina, the pressure reaching the extremity of this canal and causing the intestinal mass and the fundus to fall towards the lower abdominal wall according to Campbell's method already described.

3. It is not enough to reduce the retroflexion nor to maintain it reduced; the tissue must be stimulated. Retention therefore should be aided by cold sitz-baths, cold astringent injections, electricity, strychnia, ergot, &c, which excite contraction of the organ, and restore to the tissue the rigidity without which cure would be impossible.



FIG. 299. — Galvanic stem pessary, retained by a tampon of cotton-wool in a retroflexed uterus previously reduced.

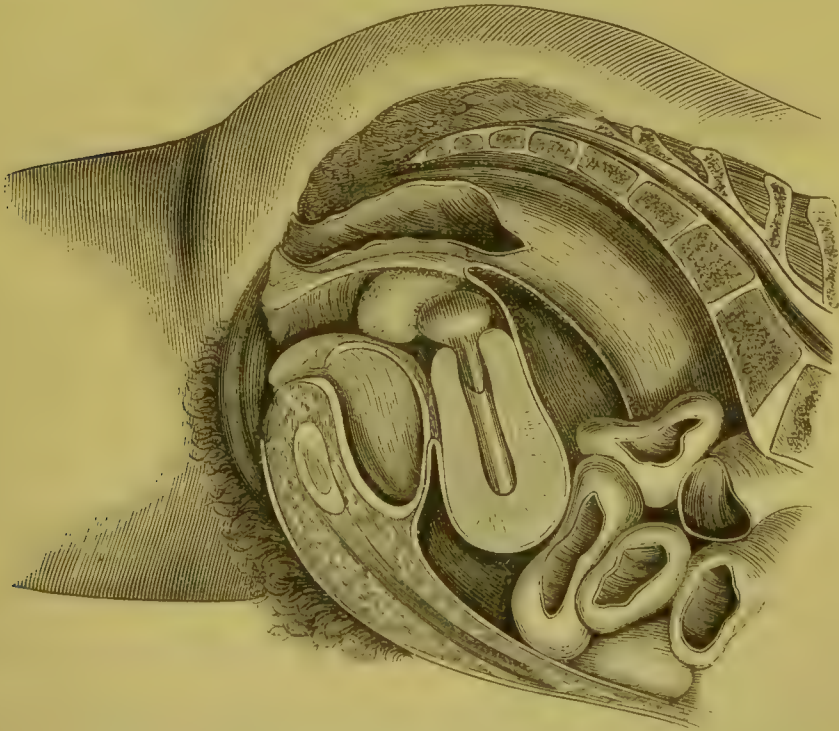


FIG. 300. — Galvanic stem pessary, retained by a tampon in the reduced uterus, the patient being in the abdominal decubitus.

4. Complications such as leucorrhœa, granulations, hypertrophic congestion, &c., should be treated simultaneously by the usual means (glycerine, plugs, cauterisation, ignipuncture, &c.).

5. Lastly, tonics and restoratives, hydropathy, sea bathing, iron, bark and generous diet will greatly contribute to the success of the treatment.

In closing I shall merely add a brief summary of two very curious cases of gastrotomy performed for the cure of retroflexion. Koeberlé¹ performed gastrotomy in a Polish lady of twenty-two years who had suffered excruciating pain for two and a half years previously; after an incision of from one and a half to two inches of the peritoneum, the uterus was drawn upwards with the fingers and the left ovary with its ligament inserted into the abdominal incision; the ligament was left one and a half inches long so as to keep the uterus in normal position; the operation was followed by cure.

Sims² performed the same operation on a widow of thirty-two years, February 22nd, 1875; he removed the left ovary, which was the size of a nut and affected with cystic degeneration, including the pedicle in the angle of incision, so as to retain the uterus in its normal position. The operation resulted in the cure of the patient who had suffered great pain for several years. I do not quote these operations as examples to be followed, but as showing that flexions are painful maladies, and that the pain may be cured by reducing the flexion. These cases are worthy of notice from this point of view as well as from the success attending enterprising surgery.

INVERSION

Inversion is the position taken by the fundus and walls of the uterus when this organ is turned back on itself like the finger of a



FIG. 301.—Eversion or ectropion of the mucous membrane of the neck.

glove, the internal and concave surface becoming external and convex, and *vice versa*.

¹ *Ueber eine radicale Operation zur Beseitigung der Retroversio und Retroflexio Uteri*, erzählt von Schetelig in dem Centralblatt für medicinische Wissenschaften, June, 1869, S. 417.

² *British Medical Journal*, Dec. 15, 1877, p. 840.

Uterine inversion, like every displacement, presents *several degrees*. Leroux, of Dijon,¹ distinguished three degrees, which since then have been generally admitted, and to which the names of simple depression, introversion (Crosse) and inversion may be given.

I think two degrees are sufficient: complete and incomplete inversion.²

I call *incomplete or partial inversion* that in which the uterus is not entirely inverted on itself. Whether there is simple depression of the fundus of the organ, invagination of the fundus into the body, penetration of the inverted portion through the neck and even commencement of the escape of the organ by the orifice—these are only shades or degrees in the accomplishment of the phenomenon; but these degrees do not involve any difference with regard to the symptoms experienced by the patient, the indications to be fulfilled nor the facility of reduction (Fig. 302). I call *complete or total inversion* that in which the

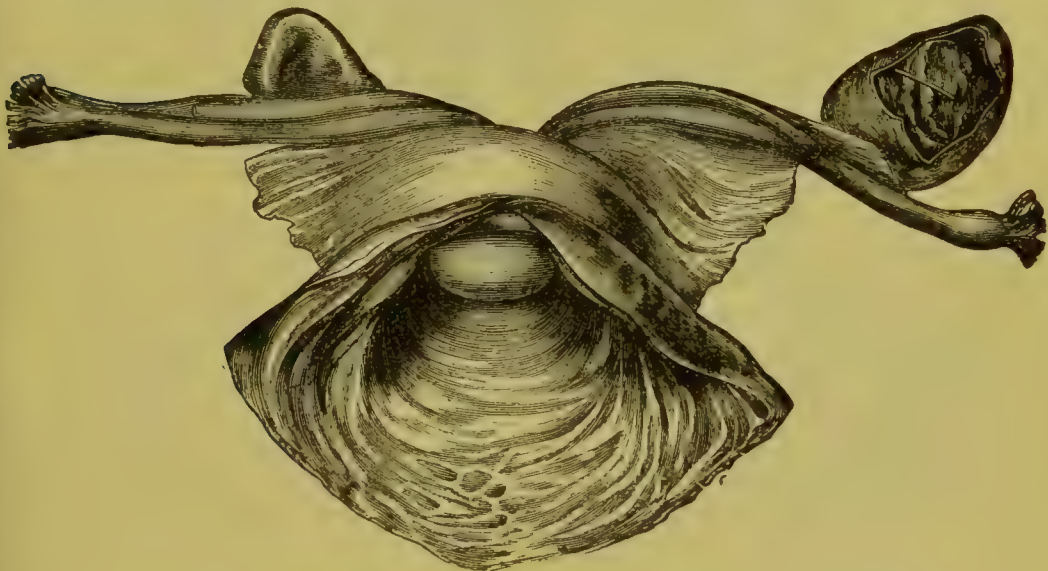


FIG. 302.—Incomplete inversion of the uterus (after J. G. Forbes).

uterus, body and neck, is entirely turned back on itself, whether the border formed by the cervix shares in the inversion or not (Fig. 303). As for the vaginal inversion which drags the uterus out of the vulva with it, it is a complication of uterine inversion (Fig. 304).

¹ Op. cit., p. 59.

² In these degrees I do not include *eversion* or *ectropion* of the cervix, which begins at the *os externum* in place of at the fundus. This eversion is seen in the widely open, soft dilatable cervix, and is in such cases produced at every examination when the bivalve speculum is used, owing to the separation of the two valves of the instrument; the two columns of the arbor vitæ are seen with their secondary projections and the subdivisions of these prominences, made unequal by the disseminated glands. It may be produced spontaneously as the result of contraction of the upper circular ring of muscular fibres of the cervix, coinciding with the softness of the lower vaginal portion of the cervical lips. But it does not go farther, and such an eversion never ends in real inversion of the organ as occurs when the malady commences by depression of the fundus like the bottom of a wine bottle.

A combination of circumstances are required to produce uterine inversion. It usually occurs after delivery (according to Crosse 350

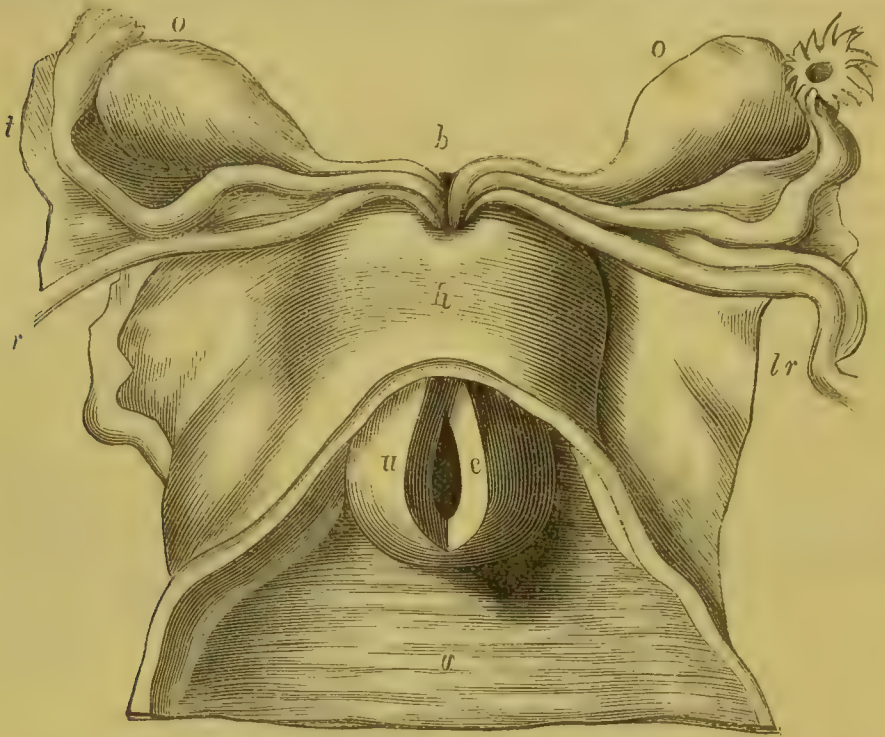


FIG. 303.—Complete inversion. From an original drawing by Biot for Crosse's *Essay on Inversio Uteri*, representing a preparation in Dupuytren's Museum, $\frac{2}{3}$ natural size. The patient died from exhaustion twenty-two months after delivery. *v*, vagina; *uc*, incised uterus, showing the cavity; *b*, border of the inverted portion, the round ligaments, Fallopian tubes and the ovarian ligaments are drawn in it; *lr*, round ligaments; *t*, Fallopian tubes; *oo*, ovaries; *h*, cervix covered by peritoneum.

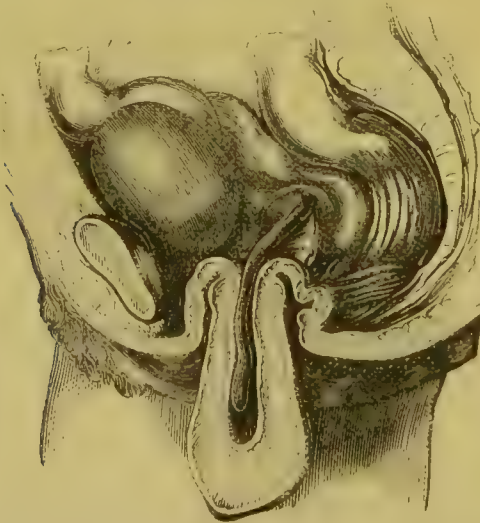


FIG. 304.—Complete inversion of the uterus, complicated with vaginal invagination.

times out of 400 inversions), and even after abortion or miscarriage.¹ It may, however, be produced in other conditions, *e.g.* it may be determined by the existence of dropsy, the presence of a fibroid or polypus, the natural expulsion of these products or attempted extraction of these tumours.

The previous development of the uterus by the product of conception, a polypus, water or blood, the weakening of the vital properties, of the muscular contractility of this organ, and even a congenital vice in its conformation, may be regarded as predisposing causes of inversion.

The determining causes are those in which the action of some power is brought into play on the fundus of the organ, which it depresses, attracts or pushes towards its cavity. Inertia of the uterus, shortness of the cord, and especially adhesions of the placenta, may determine inversion; prolonged or violent expulsive efforts at or after delivery, undue traction on the cord by the midwife or by the weight of the child escaping suddenly, may also determine it. It appears also that coincidence of inertia of the lower portion with violent contractions of the upper part of the uterus, either during delivery or afterwards, may produce spontaneous uterine invagination,² as has been proved in a few cases.³

In the case of delivery the inversion may occur at two different periods:—1, when the fœtus is expelled, owing to uterine inertia and to traction exercised by the fœtus on too short a cord, especially if the woman is standing; 2, when the placenta is expelled, generally owing to the persistence of the utero-placental connections and to the solidity of the cord. In these cases inversion may at first be incomplete; but it is almost always completed by uterine contraction under the influence of the impulse given by the efforts of the patient, the pressure of the intestines and abdominal viscera, &c. It is rather in cases of polypi and fibromata⁴ that incomplete inversions occur, which may remain for some time in the same state. In some circumstances inversion and even prolapsus uteri may be seen in nulliparæ.⁵

¹ Partial inversion at the fifth month, by Dr. Spæe, *Northern Journal of Medicine*, July, 1845.—Complete inversion at the fifth month, by Dr. John Brady, *New York Medical Times*, Feb., 1856.—Complete inversion of the uterus at the fourth month of gestation, replaced six days after the accident by E. W. Wodson, M.D., of Woodville, Kentucky, *American Journal of the Medical Sciences*, October, 1860.

² Leroux, *Pertes*, p. 56.—Ané et Baudelocque, according to Dailliez, *op. cit.*—Marjolin and Dupuytren, in a nullipara, *Dict. en 30 vol.*, art. *Uterus*, t. xxx, p. 295. Paris, 1846.

³ Ruysch, Case x.—Ch. Cowan, in *Montpellier médical*, t. x, p. 563, June, 1863.—This opinion is also shared by Saxtorph, Radfort, Simpson, West. We must, however, remember that the rarity of inversion in maternity hospitals is itself a proof of the rarity of the spontaneous production of uterine inversion during labour. As for the spontaneous production of uterine inversion occurring gradually in the case of the expulsion of a polypus or in analogous circumstances, it can no more be doubted than the fact of spontaneous reduction under the influence of the continued pressure of an air pessary.

⁴ Thomas Denman, *Collection of Engravings*, &c. London, 1787, and Ségard, *Sur les polypes utérins*. Thèse de Paris, 1804, No. 246.

⁵ Sayre, of New York, quoted by Marion Sims, p. 147; McClintock, *op. cit.*, p. 98.

Immediately after delivery the uterus usually diminishes in size owing to muscular contraction, hardening in the form of a ball, the *globus of accoucheurs*. If there is inertia, it remains soft and, under the influence of the determining cause acting on it, begins by being depressed at some point, usually at the fundus.¹ The borders of this depression are more raised on the side of the pubis than on that of the sacrum, are inclined to one side or the other according to the obliquity of the uterus and vary in their inclination, according to whether the depression, in place of affecting the fundus itself, is produced on the posterior or anterior surface, or on one of the borders. At this moment the placenta enters the neck; it is solid to the touch and apparently of larger size than normally. Traction on the cord brings it down and in proportion as it descends, the peritoneo-uterine fossa increases in depth and diminishes in width at its entrance, the inversion increasing in proportion as the placenta proceeds. These facts are easily verified in thin women who have had children. Simple depression of the fundus or of one of the walls is not painful, especially when inversion is produced slowly by the natural or artificial expulsion of a polypus, in place of occurring suddenly by that of the foetus; in such cases the woman may not be conscious of any change.

If the inversion increases it determines painful dragging round the pelvis. If it occurs suddenly it causes excruciating pain; this is followed by syncope and hæmorrhage which increases in proportion as the placenta is detached, diminishing momentarily after uterine contraction, but often causing great anxiety. The hæmorrhage by increasing the weakness and inertia of the organ leads to the recurrence of syncope and then exhaustion brings on convulsions. If the women have sufficient blood and strength left, the hæmorrhage may be stopped for the time and recur again. But even then the patients lose all hope of recovery and remain in a deplorable state of health which increases every day.

Diagnosis—subjective signs.—The sudden sensation of displacement at the time of delivery, the excruciating pain which announces the fact, the sudden collapse, the abundant hæmorrhage which follows, the absence of the *globus uterinus* in the hypogastrium, the sensations of dragging, of weight, and, later on, of pain in every movement, especially when coitus is attempted, serious hæmorrhage at the monthly period followed by abundant leucorrhœa, anæmia and the incapacity of the patient for walking or any kind of exertion are very characteristic symptoms of inversion. As for the general symptoms, some, such as anæmia, are the result of hæmorrhage; others, such as acute abdominal pain, troublesome dragging in the groins and pelvis with indescribable discomfort in the hypogastric region, vomiting and tenesmus, depend on the displacement itself; others again, such as syncope and convulsions, are secondary. Cases have occurred, such as the three mentioned by West, where the accident was unnoticed

¹ *Traité des maladies des femmes grosses et de celles qui sont accouchées*, t. ii, p. 186. Paris, 1740.

when it first occurred, and others, such as that of Madame Boivin, those of Lisfranc, that of Woodman¹ and two others communicated to

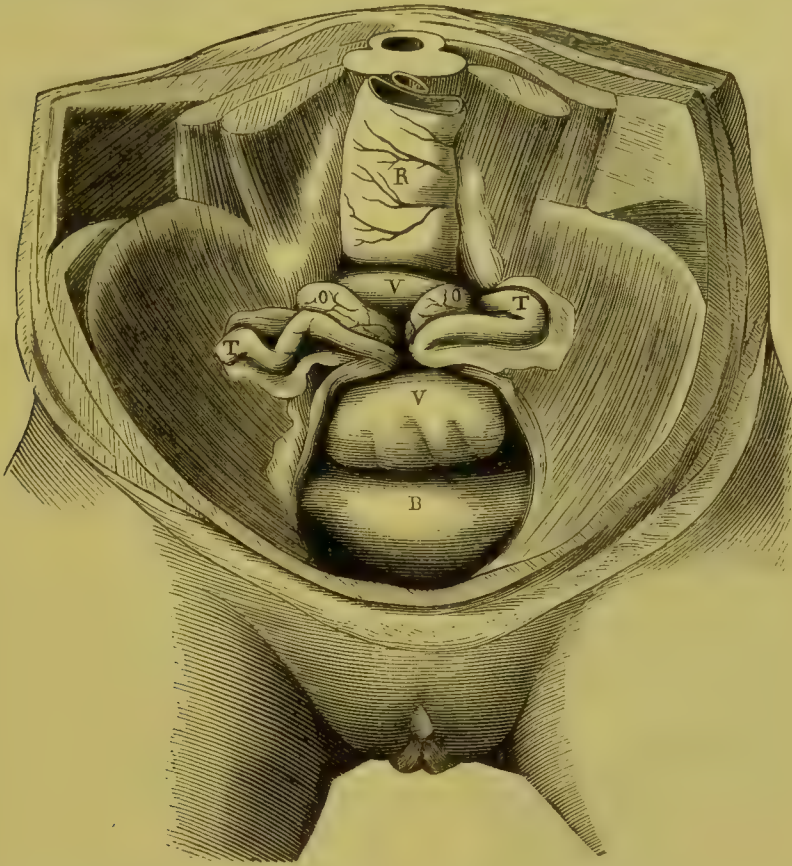


FIG. 305.—Complete and recent inversion, from a preparation in wax in Dupuytren's museum, moulded from a woman who died of hæmorrhage caused by inversion a few hours after delivery. (Heurteloup's case, taken from Breschet's *Répertoire d'anatomie*). R, rectum; B, bladder; V, V, anterior and posterior projections of the peritoneal infundibulum, on a level with the neck, into which the round ligaments, the Fallopian tubes T, and the ovarian ligaments O, are dragged.

me by esteemed practitioners where the malady was merely inconvenient. These, however, are rare exceptions, and it is to be remarked that these patients were aged.

Objective signs.—Inversion is easily diagnosed by touch combined with palpation. The upper border of the tumour is hardly perceptible by abdominal palpation. Adhesion of the placenta may drag the fundus of the inverted uterus outside the vulva; in such cases the serous, amniotic, smooth and polished surface covering the placenta is seen. If the placenta has been detached from the uterus, the tumour is smaller and its surface different in aspect, it is downy and shows the orifices of the uterine sinuses. The tumour is elongated in proportion as it has inverted and dragged with it the vagina. Hypogastric pal-

¹ *Obstetrical Transactions*, 1867. Inversion had existed for five years in a woman of fifty.

pation allows of measuring the pelvis without finding the uterus in it, and consequently of distinguishing the inverted uterus and its cup-like os from the foetal head or a mole which may also appear at the vulva.



FIG. 306.—Antero-posterior longitudinal section of the preparation representing the case of uterine inversion observed by Heurteloup (Fig. 305). R, rectum; U, inverted uterus, the convex surface having become concave, contained in the vagina V; B, bladder; P, peritoneal infundibulum at the neck.

Differential diagnosis.—Involution of the uterus is effected more slowly after inversion than after a normal delivery. The uterus takes five or six months to come back to its normal size, endangering life by repeated hæmorrhage when the patient has had the good fortune to survive the terrible hæmorrhage which usually accompanies inversion. It is at this period that an inverted uterus might be taken for a polypus, when if ablation was performed death would result, and the application of a ligature would be hardly less dangerous. When, however, inversion is recent, diagnosis is easy. Examination of the abdomen shows the absence of the uterus from the hypogastrium. This must be due either to prolapsus or inversion and vaginal touch decides the question: in inversion there is absence of the cervix from the lower portion of the tumour, the pear-shaped aspect of the latter presenting its small extremity above in place of below, as in prolapsus; a portion of the length of the vagina usually remains contained in the pelvic cavity; sometimes in the upper portion of the tumour there exists a circular border formed by the vaginal portion of the cervix.

When inversion is of long standing the tumour is usually contained in the vagina. Its surface may be recognised by the help of the speculum, its form, size and connections by touch. A red tumour is perceived, which is rounded, sometimes soft and downy, sometimes dry and rugged, connected with the vagina by a broad and short pedicle of large transverse diameter, separated from the vaginal *cul-de-sac* or from the circular border of the vaginal portion of the cervix by a groove which disappears on traction. This tumour presents no orifice at all like the os. After a careful search the orifices of the Fallopian tubes may be found; the characteristics of the internal surface of the uterus may often be recognised, especially if the tumour

is drawn outside and examined at the menstrual period. Catheterism, rectal touch, hypogastric palpation, associated with vaginal touch, enable us to make sure of the total absence of the uterus above the pedicle of the tumour and of its presence somewhere in the pelvic cavity, either in its normal direction or flexed forwards or backwards. I know that distinguished practitioners have failed to diagnose inversion and have cut an inverted uterus of some months' standing believing it to be a polypus. A pediculated or non-pediculated fibroid or polypus are all the more easily confounded with inversion that they themselves may determine it, and so may present a complex malady for the diagnosis of the physician. But although inversion may resemble a polypus in form, size and consistency, it differs in the following characters: the pedicle of the polypus is longer and thinner than that of the inverted uterus, and descends from the border of the orifice into which the finger can be introduced; the sound, if not the finger, can pass all round it (between this pedicle and the cervix which serves as a sheath) reaching the uterine cavity at different heights; in fact, hypogastric palpation and rectal touch discover the fundus of the uterus somewhere in the pelvic cavity. The case is more difficult when, after the ablation of a polypus, another intra-uterine tumour is seen in the half open cervix, which may either be a second polypus or the uterus *partially* inverted. In such a case Guéniot¹ determined the diagnosis by ascertaining by means of *acupuncture* the insensibility and density of the tumour, characteristic of a fibrous polypus, in contrast with the softness and sensibility which the inverted uterine tissue presents. *Prolapsus*, as we have already said, forms a larger tumour above than below, showing the os at its lower extremity. If it is complete and complicated with prolapsus of the vagina, cystocele or rectocele, it is still more easily distinguished from inversion because the pressure of these tumours excites the desire of micturition, the escape of the urine or the fæces. Simple cystocele and rectocele are still more easily distinguished: the pressure of the os in the vagina and of the fundus in the pelvic-abdominal cavity will always be certain means of diagnosis. Nevertheless, it might be difficult after delivery to recognise inversion in a woman who had during pregnancy a tumour independent of the uterus, like an ovarian cyst, preventing examination of the pelvic cavity by hypogastric palpation.

Treatment.—Uterine inversion is one of the most serious maladies. A number of women succumb immediately after the accident. According to Crosse² out of 109 patients who have succumbed to uterine inversion, 72 died a few hours after delivery, 8 at the end of a week, and 6 in a month. The patient dies from hæmorrhage, pain, convulsions, or syncope caused by shock, from exhaustion, or from the effects of violence, especially if the inversion has been taken for a polypus and has been dragged, bruised or lacerated. When imme-

¹ De l'acupuncture considérée comme moyen de diagnostic différentiel entre certains polypes fibreux de la matrice et le renversement partiel de cet organe. *Archives générales de médecine*, April, 1868.

² *Transactions of the Prov. Med. and Surg. Association*, vol. xv. p. 340. London, 1847.

diate danger is dissipated, there is during lactation an interval of relative safety when serious symptoms frequently cease, only to reappear later on. The inverted uterus may be strangulated especially if inversion is incomplete; Dewes completed inversion in a patient in order to put a stop to strangulation. This accident may be serious enough to produce gangrene of the organ (Crosse gives several cases) and is consequently very dangerous unless spontaneous elimination of the gangrenous uterus terminates the malady favorably. I have seen a case of this kind, otherwise I should have difficulty in believing it. As for spontaneous reduction, it is extremely rare. Although the patient has not succumbed to the shock, or to hæmorrhage, exhaustion or gangrene, she is not on that account out of danger; for she is liable to profuse hæmorrhage which recurs in the intercalary period as well as at menstruation, and continues till after reduction of the tumour or the menopause, patients during all this time running the risk of a fatal loss of blood. I knew a lady who remained thirty years in this state, and whose health only slightly improved after the menopause. Stevens of New York has also seen chronic inversion expose a patient to very dangerous periodical hæmorrhages which ceased at the climacteric. An analogous case is given by Lee. In cases where adhesions are not produced, or where a strong contraction to the cervix has not effaced the entrance to the inverted uterine cavity, a portion of the intestine may insinuate itself,¹ become strangulated and cause symptoms which may wrongly be interpreted as sympathetic, such as pain in the bowels, tumefaction of the belly, vomiting and hiccough, and which may terminate fatally. Lastly, supposing that the life of the patient is not in constant danger it is one of great trial. Besides the persistence of pain, hæmorrhage, leucorrhœa, and weakness which make life miserable, she necessarily becomes sterile and incapable of marital intercourse. Chevreuil's² case, communicated to Baudelocque, in which tubular pregnancy occurred in a woman affected with uterine inversion is quite exceptional, as well as one known to myself, where the patient was able to have intercourse without much inconvenience in spite of inversion. Therefore, although not dangerous in itself, inversion of the womb may suddenly become fatal or cause accidents which last during life. The woman who has escaped the immediate consequences is liable to greater ones later on. Therefore great care should be taken to prevent the occurrence of inversion. The woman should be delivered when lying; the uterine contractions should be diminished, if they are too violent and too frequent; stimulated if the organ is threatened with inertia; only moderate traction should be exercised on the chord; the hand should be introduced into the uterus to remove the placenta if it is adherent; after the delivery of the afterbirth, the cervix should be titillated and friction should be applied to the fundus through the hypogastrium to determine contrac-

¹ Baudelocque showed Dailliez (op. cit., p. 179) the drawing of an incompletely inverted uterus, the cavity of which contained several intestinal circulations.

² Dailliez, op. cit., p. 80.

tion of the uterine fibres and the formation of the hard and resisting *globus*; lastly, the patient should be advised to avoid efforts, falls, jumping out of bed, and all movements which may occasion total or partial displacement of the uterus whilst incompletely contracted. If inversion is effected, reduction should be made as soon as possible.

I. *Reduction of the tumour*.—If inversion has taken place it must be reduced by turning the uterus in on itself, so as to make each of its surfaces resume the relative position which belongs to it; such is the chief indication. Now reduction varies according to the degree of inversion, the absence or presence of the placenta, the position of the uterus outside the vulva, or in the vagina, the period at which the operation may be attempted, the manner of performing it, the instruments and the methods which are applicable to it.

1. *At the time of delivery* inversion, as a rule, should be reduced as soon as possible; but this reduction, though comparatively easy when attempted at once, may be more difficult after a few hours than after a few days. It is the same with uterine inversion as with all traumas: simple at first, it soon becomes complicated with the usual consequences, congestion, inflammation, &c., which may become the source of special indications, resuming afterwards its primitive state of simplicity with its natural consequences or the consecutive complications which are peculiar to it. Therefore the most favorable time for reduction is the earliest possible. If this earliest time has been allowed to pass we may be obliged to wait for some days. Lauverjat¹ reduced an inversion ten or twelve days after delivery. After this period any time is good. Only it is prudent to choose the middle of the month between two periods, so as to have to do with an uncongested organ and to run less risk of inflammatory accidents.

There is great difference of opinion among surgeons as to what should be done in cases of adherent placenta: some think it should be reduced with the uterus; others that it should be removed before reduction is made. As a rule, I think that reduction is facilitated by the removal of the placenta: the tumour is so large and its passage through the cervix so difficult that we should try to diminish the size of the organ to be reduced; by operating promptly we may hope to avoid much hæmorrhage, which, besides, can be more easily arrested after than before reduction by compression of the aorta, friction of the hypogastrium, titillation of the cervix, and the administration of ergot, especially if the hæmorrhage is from the placenta rather than the uterus. When inversion is complicated with prolapsus the difficulty of reduction is not greatly increased; if the uterus is in the vagina it may be well to draw it outside the vulva, after performing taxis as I have recommended. In any case, and at whatever period we are called on to treat the malady, reduction of the prolapsus should always be effected even if that of the inversion cannot be.

When some hours have passed without reducing the tumour it may be well to *prepare the way for reduction* by the use of different means,

¹ *Nouvelle méthode de pratiquer l'opération césarienne*. Paris, 1788.—Dailliez, op. cit., p. 82.—Churchill, op. cit., p. 480.

according to the period when operation is called for : sometimes by antiphlogistics, emollients and rest, if the tumour has been formed for some time and is the seat of inflammatory phenomena ; sometimes by sedatives, narcotics and belladonna, to prevent muscular contraction and to relax the circular fibres of the cervix ; sometimes by direct compression of the organ by an air pessary or by a stem, so as gradually to force the resistance of these circular fibres of the cervix ; sometimes by destructive cauterisation of the mucous membrane on the fundus of the organ, so as to provoke contractions in the tissue proper which determine spontaneous reduction ; sometimes direct section of the circular fibres of the isthmus at the time when reduction is attempted, to put a stop to the resistance of this contractile ring.

The *posture of the patient* most favorable to reduction is the dorsal decubitus on the edge of the bed, the pelvis raised, the head and trunk low, the legs held flexed and separated by assistants ; another assistant should depress the hypogastrium and try with his hand to fix the circular border of the cervix in the cavity, to prevent it from rising, a useless precaution when my method is followed. When no effort is required to cross the sphincter of the cervix, the genupectoral position would facilitate the reduction : it may therefore be utilised in certain cases, especially in those of incomplete inversion.

As for the *instruments* required for this operation there are none so good as the hands ; they are the only instruments that should be used : one to exercise pressure on the inverted uterus ; the other to retain the cervix and fix the organ, without which we should have no hold on it.

The hand exercising taxis may act in several ways, according to the period when reduction is made or the method employed. It was with the fist that Levret reduced the womb of a woman who had been delivered standing, and with two fingers that Baudelocque made it pass through a somewhat contracted orifice seven hours after delivery. In these cases pressure is exercised on the centre of the organ so as to depress it in an opposite direction from the depression which has characterised the commencement of the inversion. According to the size of the womb at the time, we may push the fundus back with one finger or with two like Baudelocque, or we may use all the fingers in the form of a cone, or the fist like Levret.

When the inversion is incomplete, especially if there is only a simple depression, spontaneous reduction may be determined by exciting uterine contraction, or by introducing the hand into the uterine cavity without detaching the placenta and especially without drawing on the cord, which might complete the inversion ; if necessary, the hand could be introduced again into the uterus and detach the placenta, the uterine contractions facilitating the detachment and expulsion.

When, however, reduction of a less recent and smaller tumour is attempted, the two opposite peritoneal surfaces of which almost touch, it is hardly possible to commence reduction by depression of the fundus. In such cases the tumour should be taken in the hand and, if swollen, should be pressed so as to let the blood ooze out, soften and relax it ;

the borders should then be pressed by the tips of the fingers around the pedicle, and the portion of the uterus which is continuous with the vaginal portion of the cervix should be pushed back so as to begin by reducing the portion nearest the orifice, *i. e.* the part inverted last, as in reducing a hernia.

When reduction has not been made during the first few days there is no reason to despair of effecting it after several months or even years. I have succeeded in reducing an inversion of ten months;¹ Sims² has reduced one of a year, so, too, has West;³ Barrier⁴ one of fifteen months as also White⁵ of Buffalo; Teale⁶ one of two and a half years; Bockenthal⁷ one of six years; Tyler Smith⁸ another of twelve years; and Noeggerath of New York one of thirteen years.

2. *In complete and chronic inversion* the real obstacles to reduction are: the contraction and hardness of the uterine tissue, the constriction and rigidity of the cervix, the mobility of the uterus, and especially the defective fixity of the cervix.

There is a great difference between the cases in which the uterus remains soft, probably from arrested involution, and those in which it is hard, owing to involution having taken place as usual, as is proved in the cases of several patients as well as in anatomo-pathological preparations. Reduction is as difficult in the latter case as it is easy in the former. Even when it has come back to its normal size the inverted uterus still preserves a certain flexibility. But it is very difficult to maintain this necessary flexibility; for in spite of anæsthesia, it soon contracts under the influence of pressure. After some attempts at reduction it diminishes in size and hardens like an apple, making further efforts useless. This latter difficulty is very serious, and can only be avoided by shortening the operation and using all possible means to facilitate it, stopping as soon as the uterus begins to contract, and making fresh attempts after some days of rest; or else by proceeding very slowly, determining, in imitation of nature, a gradual dilatation of the cervix sufficient to allow of the reduction of the organ.

Hence two methods: *a*, the natural one, by slow and continuous means; *b*, the artificial one, by rapid taxis. There is no doubt that when the patient can support intra-vaginal pressure of the uterus it is wise to adopt Tyler Smith's⁹ plan, which has been followed by Teale,¹⁰

¹ *Acad. de méd.*, March, 1863.

² Sims, *op. cit.*, p. 135.

³ West, *op. cit.*, p. 228.

⁴ *Bulletin de l'Acad. de méd.*, April, 1852.

⁵ *American Journal of Medical Science*, July, 1858.—*Report of the Inversion of the Uterus*, by Dr. Quakenbusch (*Transact. of Med. Stat. of New York*, 1859, p. 170). Unfortunately the patient died of peritonitis sixteen days afterwards.

⁶ *Medical Times*, August 20, 1859.

⁷ *Zeitschr. für Geburtsh.*, Bd. xv, S. 313.

⁸ *Med.-Chirurg. Transact.*, xli, 183.

⁹ *Medical Times and Gazette*, April 24, 1858.—I have lately had a similar case (*Inversion utérine de quatre mois, réduction spontanée, après onze jours de compression par le pessaire à air sphérique de caoutchouc*), described in a paper presented to the Academy of Medicine in July, 1878.

¹⁰ *Medical Times*, August 20th, 1859.

West,¹ Bockenthal,² and myself in several cases, which consists in leaving in the vagina one of Gariel's air pessaries applied close to the uterus by the pressure which a T bandage exercises on it by means of a graduated compress placed on a level with the vulva. I have cured several patients in this way, and have seen others cured by physicians to whom I recommended it. The continued pressure exercised by this pessary on the inverted uterus, and through it on the cervix, determines on the latter organ an analogous effect to that produced by pressure of the foetal head or by a polypus forced by the contractions of the body towards the cervix, *i.e.* the slow and gradual dilatation of the os, the softening of the cervical ring and its disappearance so far as to allow of the passage of the tumour produced by inversion through this orifice and so of spontaneous reduction.

When pressure causes uterine contractions patients experience intermittent pain of the nature of labour pains. In such cases we should try, morning and evening, to push back the uterus, seizing if possible the moment when the contractile cervical ring is sufficiently dilatable to allow the body to pass through. Unfortunately all patients cannot bear this continued pressure. In one case of inversion of seven and a half months the pressure of the pessary maintained for twelve days by West not only did not replace the uterus, but caused peritonitis, which ended fatally four days after the removal of the pessary.

b. Artificial method by rapid taxis.—To attempt to perform rapid reduction without fixing the uterus, by persistently pushing back this

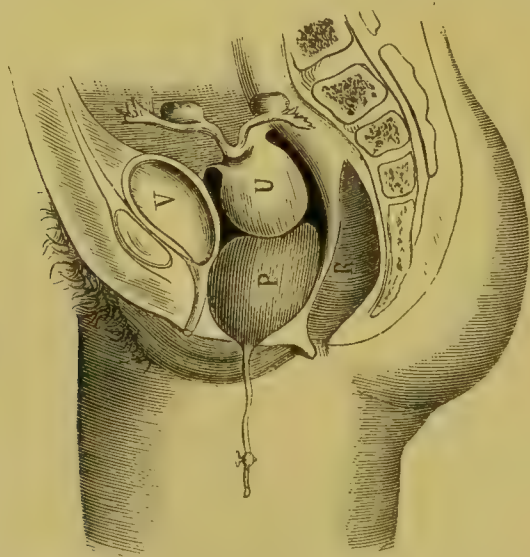


FIG. 307.—Gariel's pessary in the vagina, to compress the inverted uterus and so cause spontaneous reduction. U, uterus; P, Gariel's pessary; V, bladder.

organ into the abdominal cavity and exposing the vagina to unlimited distension, is to run the risk of lacerating this or other internal organs

¹ *Medical Times and Gazette*, October 29, 1859.

² Reduction after six years, *Deutsche Klinik* and *Bulletin de thérapeutique*, 1860.

dangerously, and of causing fatal accidents. This is what happened to White of Buffalo who reduced in five minutes under chloroform an inversion which had existed for fifteen months, but the patient, who was thirty-two years old, died of peritonitis sixteen days afterwards.

The rule of fixing the uterus by exercising counter-pressure on the hypogastrium whilst the organ is pushed back is inapplicable on account of the extensibility and defective resistance of the vagina. Aran's idea of the cervical lips when kept in place by Museux's forceps or tenaculum hooks being firm enough to support reduction without being torn is absurd. Trying to obtain a *point d'appui* by pushing the cervix back against the sacrum, as Barrier of Lyons did, is to run the risk of feeling the organ glide on this inclined plane, and so elude reduction. And to retain the cervix between two fingers introduced into the vagina whilst a third pushes the fundus, is to narrow the isthmus which we wish to enlarge by pushing back the fundus, which cannot enter the cervix like a wedge till the latter is freed from the pressure put on it. I have tried all these means and have found them defective.

Therefore when the cervix is not dilatable (in spite of belladonna or atropine applications) attempts to reduce according to the preceding rules will be more likely to fail than to succeed, even when the tissue of the body of the organ has preserved flexibility enough to be turned back.

Incision may therefore be necessary in effecting reduction. Observation has proved to me that it is practicable, and that it may be done without danger. I do not mean that it is always indispensable, nor that taxis should never be attempted without incision. When necessary, longitudinal incisions should be made, commencing from the cervix and extending along the neck, so as to divide the circular fibres of the isthmus; it is best to make two or more, some in front and others behind.¹

As to the *fixity of the cervix*, whilst adopting Barrier's precept to direct this part of the uterus towards the sacrum, I think this means of immobilisation insufficient. Therefore, in lecturing on taxis as applied to uterine inversion I have for many years insisted on the necessity of *keeping the cervix fixed with two fingers introduced into the rectum*, and have laid down the following rules with regard to the operation. To seize the cervix the operator must necessarily first draw it outside the vulva with Museux's forceps. Immediately afterwards he introduces the index and middle finger of the left hand into the rectum above the uterus, and by bending them forwards the cervix is easily fixed through the rectal wall; then seizing the uterus with the

¹ As a rule I increase the number and diminish the depth. I cannot agree with Barnes (op. cit., p. 638) as to the depth of the incisions which he recommends. Peritonitis, although not common, is to be feared. Besides this danger, there is that of hæmorrhage; Gaillard Thomas gives an example. I also prefer making incisions before and behind rather than laterally, as less likely to endanger the opening of arteries of any considerable size.

right hand he pushes it back into the vagina, still keeping the neck hooked down by the fingers of the left hand, and swings it round so that the fundus of the organ contained in the palm of the right hand is turned towards the pubis, in place of towards the rectum, the cervix being directed towards the sacrum and retained on this side by the fingers of the left hand. These fingers hold the cervical portion of the uterus through the rectal wall, and, by separating, they press strongly into the angular sinuses which the utero-sacral ligaments form on each side by their insertions right and left of the postero-lateral surface of the cervix; we feel these ligaments stretched like two guitar strings. Then with the thumb and index finger of the right hand pressure is exercised on the pedicle of the tumour, so as gradually to increase the depth of the utero-cervical groove, and by uniting efforts of taxis on the body with those of retention or immobilisation of the neck, reduction of the uterus is gradually effected without violence in a few minutes.

In reduction two phases may be distinguished: the first, which consists in bringing the body of the uterus up into the cervix; the second, in forcing the fundus to pass through the os internum. The first is accomplished by pushing the body of the uterus upwards, whether the neck is retained through the rectum or whether the vagina is stretched so as to force the orifice to open first and the neck afterwards. The second is effected more easily by compressing the fundus laterally, and by thrusting the thumb into a horn of the uterus, which makes one half of the organ slip through the *os internum* instead of the entire fundus, which presents a much larger diameter.

When inversion cannot be reduced by any of these methods should that of Thomas¹ of New York be tried? It consists in making an incision in the centre of the abdominal wall, introducing dilating forceps into the inverted cervix, and when dilatation is completed reducing the uterus by means of the other hand introduced into the vagina. Thomas has succeeded in a patient twenty-three years old; still I could not venture to recommend his method.

I have applied my method of reduction in the case of a young lady who had suffered from uterine inversion for ten months, and who was greatly exhausted owing to repeated hæmorrhage. Success was rapid, complete and lasting; pregnancy followed. Unfortunately an abnormal insertion of the placenta in the cervix caused repeated hæmorrhage and premature delivery at the seventh month; inversion was not reproduced. In another, delivered three weeks previously, my method of taxis led immediately to a radical cure. In another of my patients, cured by the same method, after vain attempts had been made by elastic compression, two pregnancies occurred followed by natural delivery, proving the permanency of the cure. Tyler Smith's patient has had several children since the operation. Another complete inversion occurred after the first labour which followed reduction, but it

¹ *American Journal of Obstetrics*, Nov., 1869.—*Union médicale*, 11 Jan., 1870. Henry Miller, *Thoughts of Chronic Inversion of the Uterus*. Louisville, 1870.

was reduced immediately without any difficulty. A patient in whom Marion Sims effected reduction after a year was also fortunate enough to have another pregnancy. Reduction therefore restores to the organ all its functions.

In quite recent inversion occurring after delivery the fundus of the uterus may suddenly enter through the cervix under the influence of

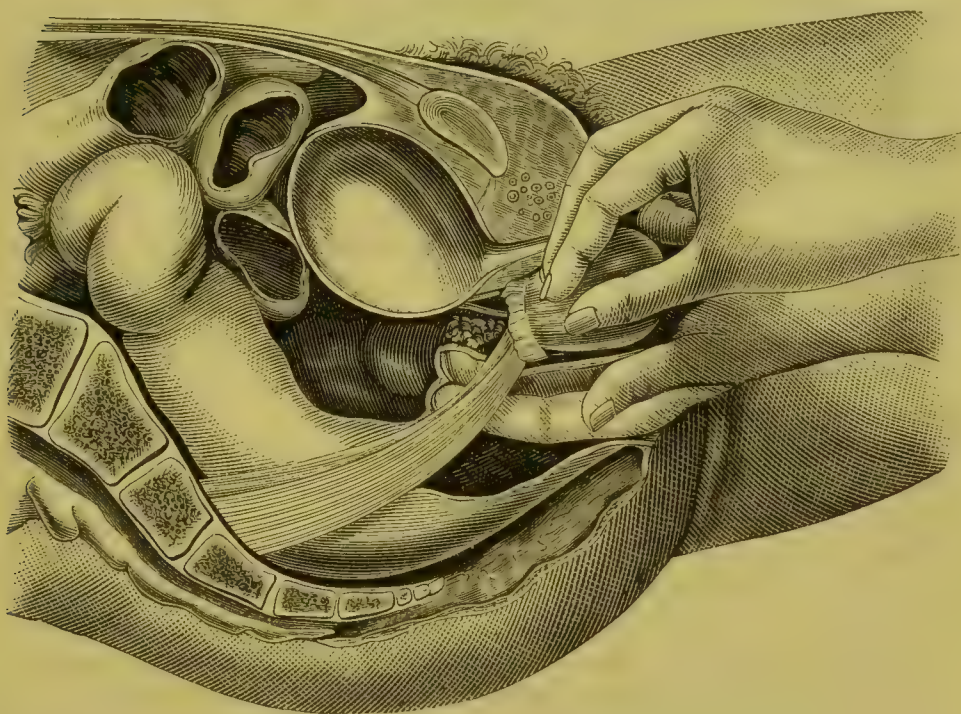


FIG. 308.—Position of the two hands in reducing uterine inversion by my method: the two fingers of the left hand are curved to retain the cervix, the fingers of the right hand push back the uterus, commencing with the parts which have escaped last. It will be seen that the utero-sacral ligaments are exaggerated, and that the bladder has been left in its usual place.

taxis, as an india-rubber ball would do that was turned on itself. In cases of chronic inversion, on the contrary, reduction is effected slowly.

The proofs of success after operation are the following: appearance of the uterine tumour at the hypogastrium; disappearance of the pelvic and vaginal tumour; the presence at the further end of the vagina of the cervical os, broad and open, leading into the uterine cavity; the introduction of a finger, or at least of the sound, into the cavity, in order to be sure that reduction is complete.

However successful the operation may have been, reduction requires to be maintained. The hand or finger should remain for some minutes in the uterus to support the walls and excite contractions. The patient should be advised to remain in the dorsal decubitus, the pelvis higher than the trunk, and especially to avoid efforts in defecation and micturition. Vaginal injections should be made and cold fomentations applied, while rest should be ensured by sedatives and antispasmodics. Lastly, stimulants should be administered in cases of inertia, especially

ergot when the uterine globus does not form and harden. Further precautions will be dictated by circumstances, and modified according to the various accidents which may arise. It must not, however, be forgotten that inversion may be reproduced. Leblanc of Orleans mentions a case of inversion reduced immediately after delivery which was reproduced ten days afterwards accompanied by acute colics and hæmorrhage, and which was reduced with difficulty.

II. *When reduction is impossible* we must guard against accidents, especially hæmorrhage, so as to make inversion bearable, or else extirpate the uterus in order to put a stop to serious accidents. In the former case palliative treatment is adopted; in the latter radical cure is attempted.

1. *Palliative treatment* should always be preferred on account of the risk attending radical cure by amputation of the uterus. If the pain is moderate, if hæmorrhage is easily arrested, if there is not much purulent leucorrhœa, if the patient can walk and take a necessary amount of exercise, and especially if the menopause is near at hand, palliative treatment only should be resorted to, such as means of retention, tonics, general and local hæmostatics, more or less powerful modifications of the uterine mucous membrane. A perinæal pad retained by a T bandage and attached to a good belt may be of great use by supporting the uterus in the vagina and preventing painful dragging. Tonics are almost always necessary, owing to the debility occasioned by repeated hæmorrhage. Generous diet, country life, a great deal of time spent on the sofa in the open air, are the best means which can be used. Hæmostatics, which are even indicated in the intercalary period, become indispensable when hæmorrhage occurs. The horizontal decubitus with flexion of the limbs, cold vaginal injections, ice applied to the hypogastrium, to the internal and upper part of the thighs, and even to the vagina, perchloride of iron administered internally and locally, dilute sulphuric acid, ergot: such are the most important medicaments to be used in palliative treatment.

Lastly, we may try to modify the uterine mucous membrane by thickening the epidermis, transforming it into a cicatricial, hard, retractile tissue, capable of opposing a barrier to hæmorrhage, and reducing the size of the tumour gradually. In place of applying perchloride of iron to this surface various caustics may be used, such as the mineral acids, Vienna paste, Canquoin caustic, or the actual cautery. Aran¹ recommends chloride of zinc in the form of Canquoin plaster so as gradually to reduce the inverted uterus to a kind of stump. I have tried to obtain the same effect from the actual cautery, but though I have applied it at white heat fourteen times I have never succeeded in destroying the mucous membrane which was always renewed. Floret,² who applied chloride of zinc to an irreducible inversion, taking care to maintain Canquoin plaster on the uterus by means of a stem with a cup-like extremity, to prevent the caustic from being displaced and destroying the vagina,

¹ Op. cit., p. 909.

² *Documents chirurgicaux*, p. 168. Paris and Lyons, 1861.

found that, under the combined influence of cauterisation and pressure at the culminating point of the tumour, the latter became gradually depressed till the inversion was reduced. This result is evidently exceptional.

2. *Radical cure or extirpation of the irreducible uterus* was till a few years ago thought to be an unjustifiable operation. Boyer¹ prescribed amputation as well as ligature. The bad results which have generally followed ablation of the uterus in cases of organic lesion have induced the majority of French surgeons to condemn the operation. I think, however, that the recent progress made by surgery in this direction, showing the possibility of removing the uterus as well as the ovaries by abdominal section, justifies the assertion that ablation of the inverted uterus by the vagina (a much less dangerous operation) should not be condemned without appeal. Not only has it been proved by numerous examples, that life is compatible with the loss of the uterus destroyed by spontaneous gangrene, but facts also show that the extirpation of the inverted uterus is not a more dangerous operation than the majority of those undergone by patients affected with lesions comparable to uterine inversion in gravity. West² says that out of 59 cases in which it has been undertaken it has been successful forty-two times. Forbes³ and McClintock⁴ have published papers describing the best methods of performing this operation.

Simple excision with a bistoury, although successful once in the hands of Velpeau,⁵ is too dangerous to be recommended.

The *écraseur* seems to be preferable to excision, because less liable to cause hæmorrhage. This instrument, however, led to fatal results in the hands of Aran;⁶ and although successful in those of McClintock⁷ and Sims,⁸ I think it is too dangerous to be recommended even when used as suggested by Denucé, who made the section in twenty-four, thirty-six or forty-eight hours, and who was successful with one patient. Hæmorrhage is not the only danger attending the operation. The opening of the peritoneal cavity, the excruciating pain produced by strangulation of the organ which has a tendency to produce peritonitis, are reasons for making us condemn the *écraseur* almost as much as excision. Excision immediately preceded by the application of a ligature⁹ is less dangerous than simple excision, or even *écrasement*, owing to the occlusion of the abdominal cavity

¹ *Traité des maladies chirurgicales*, t. x, p. 510. Paris, 1825.

² Op. cit., p. 230.

³ Op. cit.: out of 36 cases, 26 were treated by ligature (21 cures), 2 by excision (1 cure), 8 by ligature and excision (5 cures).

⁴ Op. cit.: 3 cases of extirpation of the uterus with success: 1 by ligature, 1 by ligature and the *écraseur*, 1 by ligature and excision.

⁵ *Clinique chirurgicale*, t. ii, p. 461.

⁶ Op. cit., p. 914.

⁷ Op. cit., p. 85; it should be remarked that the patient was seventy years old.

⁸ Op. cit., p. 135; the patient was thirty-nine.

⁹ English surgeons have performed the operation with the bistoury or strong

determined by ligature, the rapidity of the operation, the probable cessation of strangulation from the suppression of the tumour situated below the ligature, and from the absence of hæmorrhage which constriction seems to prevent. I do not, however, like the latter mode of operation, because the rapidity of the operation does not admit of adhesions being established to close the peritoneal cavity.

Excision immediately preceded by the application of a cautery clamp on the pedicle of the tumour¹ would be more efficacious in provoking the formation of these adhesions and so preventing peritoneal accidents. But I should fear that it would not always prevent the development of accidents characteristic of strangulation.

I greatly prefer excision by the *actual cautery* performed slowly and at several sittings. I have performed the operation twice with great success by means of the galvano-caustic wire applied for forty-eight hours, taking care to make it red hot every two hours, and to increase the constriction after it has cooled, so as only to let it penetrate each time to the extent of the tissue destroyed by the fire. There is a great chance of obtaining adhesive peritonitis by this method, and so avoiding hæmorrhage. Having been so successful in these two cases I considered the operation a safe one; unfortunately it was not so: in a third case nervous symptoms manifested themselves, apparently caused by strangulation, for which I could not account, and followed by attacks of hysteria and fatal cerebral congestion; consequently I have abandoned this method in favour of the elastic ligature or of Paquelin's thermo-cautery with the curved knife, which I have had made for excision of the uterus.

The application of an *elastic ligature* round the pedicle of the tumour with the aim of destroying its vitality is a method which presents more advantages and fewer dangers than any other. Constriction should be moderate at first till it excites sufficient inflammation to cause the adhesion of the adjacent surfaces of the peritoneum covering the inverted organ. If pain or nervous symptoms occur, as frequently happens after the application of the *écraseur* or ligatures when rapidly tightened, the ligature should be quickly relaxed, when these serious symptoms usually cease. In a short time constriction may again be applied and increased gradually, the organ being allowed a few hours' or if necessary a few days' rest. Formerly I used a double flexible iron wire, the two extremities of which are passed through a *serre-noeud*, so that constriction may be maintained and increased gradually; catgut may also be used, or silver wire covered with silk, such as dentists use.

In one case in which I employed this method the uterus fell the thirtieth day, the patient (who was only twenty-three) having run no danger whatever. In this case the ligature did not act as a bistoury

scissors. Palasciano in one case of inversion of six years' standing began with a red-hot metallic ligature; he next used a loop of wire which he drew very tight, and cut the uterus below with scissors; he was fortunate enough to save his patient. During the next four months there was a sero-sanguineous discharge from the stump by the vagina.

¹ Valette, *Lyon médical*, April, 1871.

or *écraseur* by dividing the portion enclosed in the loop, but only by causing ulceration of the part on which constriction was exercised, and by simultaneously obtaining the sloughing of the tumour and the formation of salutary peritoneal adhesions. Care must be taken to maintain cleanliness of the vagina by frequent detersive lotions, so as to avoid the accumulation of muco-purulent and putrid discharges. The fall of the tumour may be hastened at last by rapid constriction of the pedicle, the adhesions which have been established saving the patient from the accidents to which she would have been exposed by the premature use of the bistoury.¹

Since then I have employed the elastic ligature by means of an india-rubber tube, tightened moderately the first day, and more every succeeding day till the tumour falls, which it generally does from the twelfth to the eighteenth day. I have employed this mode of operation twice; one of my pupils by my advice used it a third time. These three patients recovered completely without ever having run any danger. Before commencing, it is well to make a groove round the pedicle of the tumour with the actual cautery or the thermo-cautery for the elastic ligature, which has the double advantage of acting as a guide for the ligature and of making its first application less painful. The treatment of inversion, therefore, answers all the indications: 1, for *quite recent inversion* artificial reduction by my method (Fig. 310), the placenta being previously removed if still adherent; 2, *Later*, spontaneous reduction by Gariel's pessary (Fig. 309); 3, *if the uterus resists* try artificial reduction by taxis, according to my method, with the help of two fingers hooked into the rectum, taxis always aided by chloroform, and, if necessary, by several incisions not too deep; 4, if the uterus still resists and if the *danger of exhaustion from hæmorrhage* becomes urgent, ablation of the body of the uterus by the elastic ligature applied in a groove traced by the thermo-cautery (Fig. 311). A vaginal portion of the neck remains, differing in no respect from that seen in the vagina in the normal condition.

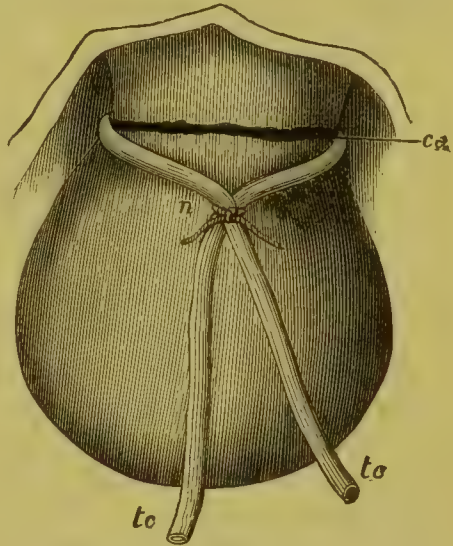


FIG. 309.—Inverted uterus, the ablation of which is to be performed by the elastic ligature; *ca*, groove of about two or three millimetres, hollowed out all round the pedicle on a level with the cervix by the actual cautery, to receive the ligature; *tc*, india-rubber tube; *n*, knot of wax thread fastening the ligature and keeping it distended in order to maintain constriction.

¹ By adding my cases to West's statistics, we find that out of sixty-six ablations of the inverted uterus forty-eight cures have been obtained, and proportionally far more cures by ligature than by either of the other methods.

CHAPTER III

MORBID STATES WITHOUT NEOPLASM—FLUXION—CONGESTION—ENGORGEMENT
—METRITIS — OVARITIS AND SALPINGITIS — PERI-UTERINE INFLAMMA-
TION—OF LEUCORRHŒA IN GENERAL, AND UTERINE CATARRH IN PARTI-
CULAR—HYPERTROPHY AND ATROPHY—GRANULATIONS AND FUNGOSITIES
—ULCERATION AND ULCERS OF THE UTERINE CERVIX

THESE are maladies which may be caused by purely local action or by a general and even a diathetic affection reacting more or less on the rest of the organism. But they are compatible with the preservation of form, structure and texture of the organ, and are neither accompanied by the production of new organic elements nor by the formation of any tumour. They answer to the class of maladies designated under the name of vital affections as contrasted with organic lesions.

The first is only the exaggeration of a physiological condition, uterine *fluxion*. Fluxion by being repeated gradually produces the second, *congestion*. The reproduction or permanence of these two conditions or of one of them suffices to produce the third, *engorgement*. Fluxion and congestion are the usual if not necessary elements of *inflammation*, *leucorrhœa*, *hypertrophy*, *granulations*, *fungosities*, and *ulceration*, which are also often connected with the existence of a diathetic affection. There is a sort of connection between these morbid links owing to the mutual influence which they exert on each other. Fluxion, for example, when repeated becomes a cause of congestion. Engorgement is usually a consequence of the repetition of morbid acts which keep up these two conditions, rather than a malady occurring spontaneously. Inflammation, while developed in a direct manner, hardly ever exists without being kept up by a congestive state or without determining a permanent congestion of the organs in which it is located. Leucorrhœa produced by uterine catarrh or endo-metritis, is often complicated by a condition of inflammation, fluxion, congestion or engorgement. Hypertrophy, when not consecutive to inflammation, is not produced without previous congestion.

Granulations and fungosities, whilst sometimes arising as simple papillary hypertrophy of the mucous membrane, are seldom produced without having been preceded by more or less extensive inflammation, folliculitis, uterine catarrh, leucorrhœa, &c. Lastly, ulcers often offer a combination of several of the morbid states just referred to; they are necessarily accompanied by a secretion, are frequently covered with granulations, excite round them hypertrophy of the neck which is their usual seat, and seldom last any time without being accompanied by inflammation and congestion.

FLUXION

Uterine fluxion (from *fluere*, to flow) is the temporary accumulation of blood in the uterine vessels. This morbid condition is characterised by a movement of the blood towards the womb, and is accompanied by symptoms of molimen, analogous to those which in some women announce the menstrual period.

Uterine fluxion is most frequently acute; but it may become chronic by indefinite repetition. Even in the latter case the characteristic which distinguishes it from congestion is the rapidity of its appearance and disappearance. It may be followed or not by hæmorrhage, according to its intensity, its unusual prolongation, and the seat towards which it tends. It may either affect the uterus alone, or the uterus and appendages simultaneously, most usually the latter. It disappears on the dead body; in autopsies we constantly find the size of the uterus less than it appeared formerly. Injection of the tissues, tumefaction, redness extending to the cervix and often to the vagina, a mucous or sanguineous discharge sometimes established as at the approach of menstruation: such are the immediate consequences of uterine fluxion. The physiological fluxion which precedes menstruation may be taken as the type of morbid fluxion. The *temporary* modifications produced in the organ by fluxion can readily be understood by studying the uterus in women who have died during menstruation, and in whom the sudden suspension of life has prevented the dissipation of the uterine plethora or congestion caused by fluxion. One of the best proofs that fluxion is a different morbid state from congestion is that the best means of treatment for the latter are, by the admission of all practitioners, not only the worst means of treatment for the former, but the best means that can be employed to produce it. For instance, the repeated application of leeches to the cervix, anus, labia, groins, hypogastrium and loins is an efficacious means of subduing congestion, and disgorgeing the congested uterus of blood; on the other hand, all practitioners know the tendency they have to induce or increase the menstrual flux when administered at the opportune moment, *i. e.* immediately before the period.

I have seen with interest that the existence of fluxion is not only accepted by several pathologists who had formerly ignored it,¹ but also that its reality is placed beyond all doubt by Virchow in his scientific researches on pathological anatomy and histology. "The vessels," Billroth² tells us, "dilate or become distended when irritated, and are disgorged anew soon after irritation has ceased. It is as easy to observe the fact as it is difficult to discover the cause. The exaggerated afflux of blood is the reaction or response of an irritated vascular

¹ Nonat et Linas, *Traité pratique des maladies de l'utérus*, p. 167. Paris, 1869.—Revillout, *Des Tumeurs fluxionnaires de l'utérus* (*Gazette des hôpitaux*, 1869, 1874).—Jaccoud, *De la Congestion*, in his work entitled *Pathologie médicale*, t. i.

² *Die allg. chirur. Pathologie u. Therapie*, p. 62. Berlin, 1876.

part to the irritation: *ubi stimulus, ibi fluxus*. The names active hyperæmia, active congestion, which have been employed to designate this afflux of blood do not express the mode of production, and Virchow has rightly brought into use the old term *fluxion*."

Diagnosis.—Uterine fluxion is met with in nulliparæ as in other women; it is common amongst girls, and in them seems to be produced by difficulty in the establishment of menstruation. The climacteric is also marked by the appearance of irregular uterine fluxions and hæmorrhages.

Subjective signs.—Heavy dull pain developed rapidly in the lumbosacral region, intra-pelvic weight, a feeling of internal fulness and heat: such are the local symptoms in the beginning. If the fluxion continues there are dull colics in the sides, umbilicus, and hypogastrium, returning momentarily, or even periodically in the form of spasms. If the afflux of blood increases the symptoms become more marked; the patient experiences the sensation of a weight, as well as discomfort which seems to be produced by a large foreign body, a burning heat in the pelvis, dragging in the loins and groins, acute colics, deep pelvic pulsations synchronous with those of the pulse. At this stage there is often great difficulty in sitting, standing, walking, &c. In the most serious cases the internal heat felt in the abdomen is constant and increases at intervals, extending from this point, as from a centre, towards the umbilicus, and more frequently along the anterior portion of the thighs to the knees. This burning heat is coincident with irritation of the vulva, frequent desire for micturition accompanied by a burning sensation, which is sometimes so acute as to force tears; the urine is passed in small quantity always loaded with urates or phosphates, and sometimes containing more or less mucus. Constipation is sometimes very obstinate. Occasionally, when the fluxionary movements are exaggerated the motions are accompanied by mucous excretions forming a kind of membrane. At other times there are diarrhœic evacuations somewhat like those of dysentery, or it may be that only at intervals there is an unnaturally frequent and very painful desire to pass urine and go to stool.

General symptoms precede and accompany these local symptoms. Those which precede them are the special phenomena indicating an afflux of blood towards the uterine economy, with symptoms of *molimen* more marked than the *prodromata* of menstruation; shivering, spasm, vague nervous phenomena, irritability, and a tendency to tears. Those which accompany them are phenomena of reaction, showing that the organism shares the sufferings of the uterus; nervous erethism, circumscribed pains, neuralgia, gastralgia, migraine, dyspepsia, vomiting; in fact when fluxion occurs frequently, or when it lasts for some time, the phenomena of fluxion observed in the pelvic organs are repeated in the most important organs of the economy, the heart, lungs, brain, &c.

Objective symptoms.—The hypogastrium is enlarged, moderately warm, only slightly painful, but sensitive to pressure. The vagina is usually warm and moist, sometimes the seat of abundant leucorrhœa.

The uterus is larger, heavier, less mobile, considerably lower and inclined forwards, slightly painful to pressure, or at least to movements directly conveyed to it or transmitted through the body. The size of the uterus is variable, a symptom which distinguishes fluxion from congestion. In some cases tumefaction is rapid. In women recently delivered it may become enormous in a few hours, passing the brim. The body spreads out above the neck, projecting beyond it like a bladder, a proof that in fluxion as in congestion it is the body rather than the neck that is affected.

Usually the vagina and vulva participate in the fluxionary movement, presenting a violet or dark red colour. Afflux of blood may also take place towards the most important organs of the economy; these symptoms also distinguish fluxion from congestion. According to the seat of the localisation, they produce troubles characterised by flushing of the face, giddiness, syncope, cardiac pain, a feeling of suffocation, epigastric constriction, &c., alternating with the uterine phenomena or accompanying them. These uterine or visceral fluxions when chronic are often followed by hæmorrhage, which however is rare in acute fluxion. It at first takes the form of menorrhagia, coinciding with more marked fluxionary symptoms. Menstruation soon becomes deranged and advances a few days, a week, then a fortnight, and as it also lasts longer, patients end by losing blood continually.

The hæmorrhage may gradually diminish so that patients may think they have got rid of it; but the least effort, fatigue, travelling, or excessive intercourse, bring it back more violently than ever, together with other visceral hæmorrhages, which gradually produce anæmia.

Treatment.—Fluxion is always serious, even in the simplest form and in the acute stage, because it shows a special tendency of the uterus to become the terminal point of sanguineous *raptus*; but when it becomes habitual it demands still more attention from the physician, because the uterus is apt to become congested and hypertrophied; because it gives rise to hæmorrhages producing anæmia, and sometimes to leucorrhœa, throwing women into a deplorable state of weakness; lastly, because owing to this abnormal activity of circulation, there is a tendency to the development of morbid products within the substance of the uterus.

As for the indications to be fulfilled, we must first discover whether the uterine fluxion is secondary, that is, whether it is caused by an alteration of the uterus or its appendages, or whether, on the contrary, it is primary, as is usually the case. We must then take into account the circumstances determining it either during menstruation or in the intercalary period or after delivery or abortion. These circumstances are: premature or excessive intercourse, falls on the seat, mechanical action of all kinds, overfatigue, cold, moral excitement, especially when of a sad nature, &c. Acute fluxion must also be distinguished from chronic; the former usually occurs in girls, the latter may be chronic from the commencement, owing to atony of the constitution, or it may assume the character of chronicity from the repetition of the hæmorrhage and the consequent anæmia, or from

defective nutrition caused by dyspepsia. Acute fluxion becomes chronic, and fluxions in other organs follow as a result of the disorder produced in the vascular system, which finally seems to escape the control of any regulating influence. The treatment of uterine fluxion ought to be an application of the methodic treatment of fluxions in general, the principles of which I have already laid down.

1. If fluxion is imminent or quite recent, recourse should be had to revulsives, *e. g.* bloodletting from some point more or less distant from the seat of fluxion. General bleeding is especially indicated when the fluxion depends on constitutional plethora, or when the patient is in good health. I have several times drawn blood from the arm in young women affected with recent fluxions, always taking care not to exceed the strength of my patients. Another revulsive recommended by Hippocrates, and which is very beneficial, provided its action is sustained for several hours or even days, is the application of cupping glasses to the breasts. In delicate patients cupping and other cutaneous revulsives should be preferred to blood-letting. Sinapisms applied to the breasts, the upper part of the trunk, the arms, the wrists, and if necessary large blisters on the arms, produce energetic and salutary revulsion. I have once seen the vomiting caused by antimony effect speedy revulsion and dissipate a recent uterine fluxion. However, the shock produced by the vomiting and the debility caused by the antimony might dispose the vascular system to an irregularity of action favorable to the recurrence of the same fluxion.

Lastly, we may have recourse to intestinal revulsives, but two important conditions must be observed. The first is only to use them after bloodletting or cutaneous revulsives, lest the concentration which follows the action of purgatives should be unfavorable. The second is to avoid drastics (especially aloes), which congest the lower portion of the intestine and favour the development of hæmorrhoids, thus increasing the uterine fluxion in place of dissipating it. Saline purgatives, magnesia, castor oil, should on all accounts be preferred. Whilst revulsive treatment is being employed the patient should remain in bed, the pelvis slightly raised by a hard pillow, the head elevated, the legs flexed on the thighs and the thighs on the pelvis. Cold compresses or bladders of ice should be applied to the abdomen and thighs, especially if fluxion is accompanied by hæmorrhage. It is also useful to prescribe diffusible stimulants; 48 drops of liquid ammonia in 2 ounces of syrup to be taken in drachm doses in the 24 hours in a glass of orange water, or from 4 to 7 drops of acetate of ammonia given in an aromatic infusion and repeated 3 or 4 times a day.

2. If the fluxion is fixed in the uterus, revulsives should be preceded by derivatives with the view of deviating the flow of blood which habit and length of duration prevent being carried in another direction. Cupping glasses and leeches to the loins, groins and hypogastrium are the best derivatives in such a case. Lastly, when fluxionary movements are frequently renewed, and have produced

congestion, it may be advisable to treat the fluxion as a true congestion, by depletives and derivatives before resorting to revulsives. In such cases leeches may be applied to the cervix, even in women who are apparently exhausted, provided that tonics and generous diet are prescribed at the same time.

Whether simple derivatives are employed, or depletives and derivatives simultaneously, the effect produced is to disgorge the uterus and to deviate the flow of blood directed towards this organ. But the fluxion although mobilised is not necessarily dissipated. It is then that revulsives should be resorted to. Bleeding is too weakening and its action not sufficiently sustained for it to triumph over an evil which has taken root in the economy. Although the fluxion is mobilised, we can only hope to uproot it by the use of means the action of which is more continuous and energetic. Therefore hydropathy is the best revulsive, care being taken after applying the douche to warm the skin by exercise, or if the patient is too weak for that, by stimulating frictions, or a short time spent in dry hot air; and after the douche has been administered for two or three minutes good reaction should be determined, either by dry frictions or by exercise. These means of revulsion repeated twice a day produce surprising results in a few weeks. In cases where the patient was weakened by repeated hæmorrhage, and where the fluxion was directed alternately to the uterus and other viscera, this means has always seemed to me heroic. Hydropathy is beneficial not only by effecting a revulsion over the whole cutaneous surface, but by giving tone to the whole organism and producing a sedative effect on the nervous system. The habitual use at table of mineral waters such as those of Lamalou, Oreza, Boulou, or Vals, mixed with a little wine, is of great service. It must be remembered that, in the treatment of long-standing fluxions, those revulsives should be used which strengthen, not those which debilitate. In proportion to the strength of the organism and to the equilibrium existing between its various functions and between its various organs, will be the chance that the fluxion when once dissipated will neither resume its usual course nor be directed towards some other viscus.

The other indications to be fulfilled although secondary are important.

Rest, which is necessary in the acute stage, may be so also in the chronic state if walking causes pain and increases the evil. In the contrary case, exercise in addition to hydropathy acts as one of the best tonic revulsives and one of the best hygienic means for regulating the equilibrium of all the organs.

The bowels must be kept regular, as the only means of keeping up the appetite, facilitating digestion and overcoming constipation; the latter is a dangerous complication of all uterine diseases, but particularly of fluxion and congestion, which are increased by it. Therefore laxatives should be employed in place of purgatives; I find gr. $\frac{1}{8}$ of extract of belladonna with gr. $2\frac{1}{4}$ of medical soap made into a pill and taken every night very effectual, with a spoonful of castor

oil once a week, or rhubarb and magnesia in equal quantities in a cup of acorn coffee or a glass of Hunyadi Janos water. Laxatives should be given alternately with enemata of oil or a solution of manna, treacle, or glycerine, so that the large intestine may be emptied. Besides these two indications there is a third which may require to be fulfilled: that of cooling the uterus frequently, either directly by vaginal irrigation, or by acting upon the neighbouring organs by small enemata taken at bed time. Lastly, the debility which often accompanies the cessation of the fluxion involves the necessity of care during convalescence. After the disappearance of acute symptoms patients recover slowly in proportion as menstruation is established once more in a regular manner. The return of health is still slower after exhaustion caused by chronic uterine fluxion.

CONGESTION

Congestion (from *congerere* to accumulate) is the persistent accumulation of blood in the vessels and capillaries of the uterus. Sometimes it is the result of simple fluxion strong or repeated, sometimes of a hindrance in the general circulation. It plays an important part in the majority of uterine diseases because of forming an integral part of the uterine functions.

In fact every menstrual period is composed of three successive acts: fluxion, congestion, hæmorrhage. Congestion, whether the result of fluxion or uterine erection, necessarily precedes hæmorrhage; periodical uterine congestion is therefore physiological. When the abundance of the menstrual hæmorrhage is proportioned to the intensity of the uterine congestion all abnormal symptoms disappear with the discharge. But if resolution is not complete, the uterus remains the seat of a congestion which increases every month, giving rise to a permanent morbid condition: chronic congestion.¹

It becomes morbid by becoming exaggerated, by being prolonged, or by encountering diseased organs.

The conditions producing congestion may be local or general. The local conditions are: a vascular system excessively developed, especially the venous system without valves and of feeble contractility; a disposition of muscular tissue favouring stasis of blood in the veins as in all the erectile tissues; the position of the organ which is low, pressed from above downwards by the weight of the abdominal viscera, subject to erections and to monthly congestion and hæmorrhage, as well as to increase of size, dilatations of the venous system, and to enormous hypertrophy at every pregnancy.

The general conditions are those which produce irregularities and difficulties in the circulation with slackening of the blood current, such as diseases of the heart, lungs and liver.—Congestion may be idiopathic or symptomatic; sometimes it constitutes a simple morbid state, existing

¹ Fleury, *Traité d'hydrothérapie, des Congestions sanguines chroniques de l'utérus*, p. 446. Paris, 1852.

by itself—primitive or idiopathic congestion, facilitating unfortunately the localisation of diathetic affections on the uterus or its appendages; sometimes it is a consequence or complication of an existing malady—secondary or symptomatic congestion. It may also be active or passive. The active form, due to the persistence of the fluxionary movements, is a result of the constant afflux of blood and of the distension of the vessels in an organ which never empties; the passive is due to atony, to defective contractility of the vessels, which once filled are not emptied, or to the difficulty placed in the way of the return of the blood owing to pressure or alteration of the uterine vascular system, or to an obstacle in the general circulation. Both may be either acute or chronic: passive congestion is usually chronic. It may present numerous varieties, from feeble sanguineous congestion to hæmorrhagiparous congestion. After death it usually persists, its anatomical alterations being injection, softening, flexibility of the uterine tissue, especially of the body; dilatation of the vessels, forming sinuses, which on section allow the escape of black blood and the entrance of a director into their orifice; red-brown colour of the mucous membrane of the body, with swelling and thickening, the dissemination of red points (so many little clots), oozing of drops of blood from the surface of the mucous membrane, especially on pressure, a violet colour of the vaginal surface of the cervix, contrasting with the relative paleness of the mucous membrane lining the cavity. In the tubes and ovaries there are found softening, red-brown colour, tumefaction, and sometimes hypertrophic thickening; sometimes uterine and even vaginal leucorrhœa with congestive coloration of the upper portion of the vagina; sometimes also in the Fallopian tubes sanguinolent or opaque, white or yellowish liquid mucus, containing hardly more than epithelial cells; sometimes, lastly, in the thickness of the broad ligaments, dilated venous bundles, resembling the pampiniform plexus in man, forming tumours of varying dimensions, attaining half the size of the fist and reaching the renal region, coinciding with great congestion of the uterine tissue, and very marked in aged women who have succumbed in the midst of symptoms of obstruction of the venous, abdominal or general circulation.

Diagnosis.—Uterine congestion occurs most frequently in multiparæ. Therefore we can form a good idea of several of the alterations characterising it, not only by examination of the uterus during menstruation, but by autopsies of women recently delivered; it must not, however, be forgotten that in women who have aborted there is in the uterine tissue, in addition to the congestive state, the remains of the hypertrophy which modified it during pregnancy.

Subjective signs.—Dull pain in the lumbar region, weight at the sacrum, anus and perinæum, a sensation of fulness in the pelvis, internal heat: such are the first local symptoms of recent congestion, as of fluxion. What distinguishes congestion from fluxion is the usual absence of symptoms of molimen and sanguineous *raptus*, unless the fluxion which has caused the congestion persists or returns repeatedly. It is the same in a number of cases where congestion may be produced

without fluxion passively from defective tone or contraction of the capillaries, or where it becomes passive after having been active from a gradual loss of tonicity in the vessels; or where it may be in a sense hypostatic owing to some obstacle placed in the way of the uterine or general circulation.

The symptoms of fulness persist in the pelvis with sensations of dragging in the loins or groins, and troubles in the neighbourhood; there is frequent desire for micturition, obstinate constipation often accompanied by tenesmus, irritation of the vesical and rectal mucous membranes with evacuation of more or less considerable quantities of mucus accompanying both micturition and defæcation. The lumbar pains increase, those of the groins extend down the thighs to the knees, in addition to which there is often in the left iliac region or above it a fixed pain which seems to depend on congestion of the left ovary, or on the dragging which the uterus, when prolapsed and with its fundus inclined to the right, may exercise on the ligaments of the left side; lastly, there is the sensation of a large body threatening to fall, compressing the bladder and rectum, weighing even on the anus, and seeming to make an effort to pass the vulval orifice. The sudden contraction of the abdominal wall, and the shock which follows it in yawning, coughing, or in the expulsion of fæcal matter, &c., is accompanied by a painful sensation as if a heavy body was falling out of the pelvis. Uterine congestion lasts indefinitely; nothing indicates that it is cured spontaneously. Hæmorrhage is sometimes added to the other symptoms as in cases of fluxion; but usually menstruation occurs rarely and irregularly, sometimes being altogether wanting, although the characteristic pains of molimen may be present; sometimes occurring too frequently, every three weeks, every fortnight, or every week, but consisting of a very small quantity of blood. This diminution in the quantity of menstrual blood is characteristic of dysmenorrhœic congestion. In addition there are uterine colics and sometimes even a kind of uterine tenesmus, the consequence of expulsive pains which oblige patients to bend forwards. Usually some of the general symptoms of uterine maladies are also produced, such as dyspepsia, disturbances of nutrition and consecutive nervous phenomena; and later on, debility, anæmia, palpitations of the heart, a small dry nervous cough, incapacity for any exertion, emaciation, dry skin, with the sallow hue of the face and dull eyes characteristic of the *facies uterina*.

Objective signs.—Hypogastric palpation associated with vaginal touch shows an increase of size in the uterus, but of the body more than the cervix. The pain caused by this examination is less owing to the sensibility of the uterus than to the difficulty which the increase of size puts in the way of displacement, and to the dragging which movements conveyed by the finger exercise on the neighbouring organs, the broad ligaments, bladder and rectum. Often the uterus is prolapsed so much that the cervix rests on the perinæum. At the same time the natural anteversion is increased. It is, however, necessary to remark that congestion, which is so common after delivery and abortion, at a time when the uterus may be found in another position owing

to the softness then characterising its tissue, only exaggerates this vicious position; and lateral inclinations, retroversions and retroflexions may also become exaggerated by increased weight and softening of the tissue of the organ.

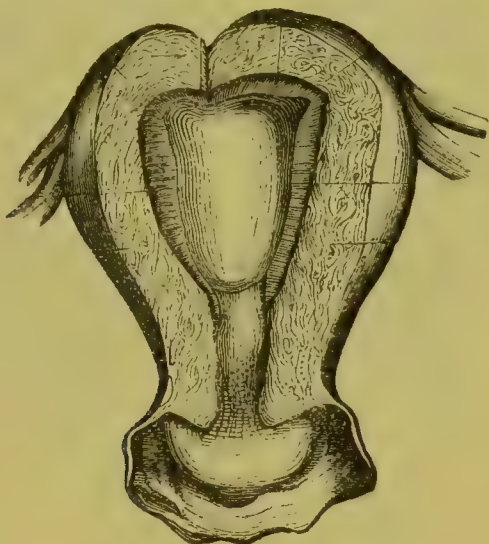


FIG. 310.—Reduction in the size of the uterus in the intercalary period.

Congestion is often also more localised than fluxion. It more frequently occupies the whole of the organ than a portion of it; it may, however, unlike fluxion, occupy one portion to the exclusion of the other or in a more marked degree, and more frequently the body than the neck, and one wall more than the other. The neck may be so much congested that it cannot be embraced by any speculum; it may present a dark red or violet colour, and offer to the touch a large soft swelling, with the orifice half open and projecting outwards circularly, especially on a level with the two lips in multiparæ, giving to the cervix the appearance of a mushroom, or of a cone with the base downwards. In the utero-vaginal *cul-de-sac*, on one or both sides of the uterus, bundles of venous vessels may be felt gorged with blood, such as are sometimes seen in the broad ligaments in old women where congestion is of long standing. Sometimes a certain amount of mucus is seen escaping from the cervix. The cavity is also enlarged as occurs likewise at the time of erection accompanying menstruation or coitus. This can be ascertained by the use of the catheter, which can be moved with great facility in the uterine cavity. This increase in capacity is so marked that it is observed even in nulliparæ.

Treatment.—When uterine congestion is symptomatic its cure is subordinate to that of the malady on which it depends. An alteration of the uterus, a fibroid for example; a disease of the ovary or Fallopian tube; a disease of the bladder or rectum; peritonitis; chronic enteritis may keep up a congestive state in the womb which we may try to alleviate but cannot hope to cure, until the original malady which has

gradually produced the uterine congestion has been cured. Sometimes congestion complicates uterine diseases without being exactly sympto-

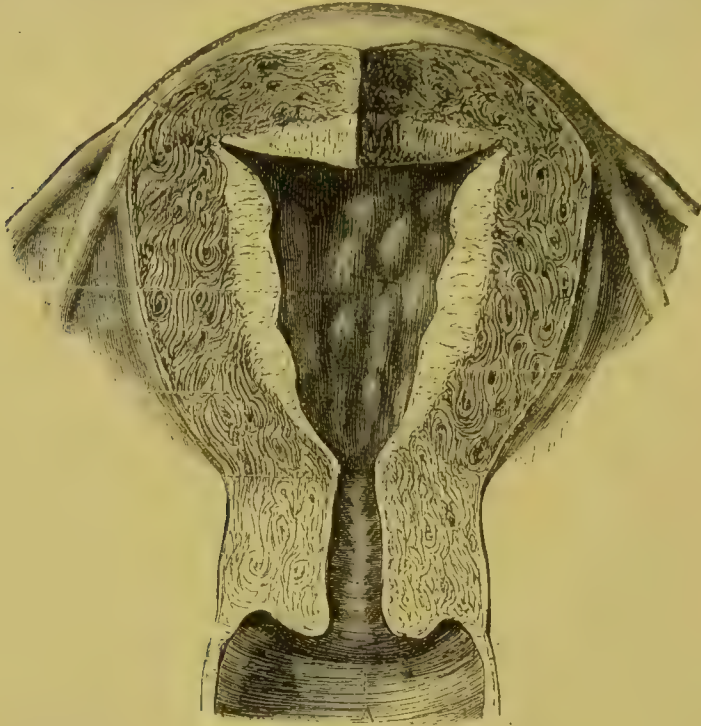


FIG. 311.—Considerable increase in the size of the uterus, either from temporary menstrual congestion or from morbid and permanent congestion, particularly of the body.

matic. In such cases it both hinders cure and increases the diseased condition. Hence the necessity of treating the congestion with the view of lessening the disease. As for idiopathic congestion, it weakens patients, disturbs the functions of the uterus, and disposes it to disorganisations which may result from the localisation of the diathetic affections to which the patient is exposed.

The capital indication therefore is to put a stop to the accumulation of blood in the uterine economy, to abstract blood from the organ and prevent its being filled anew by giving a different direction to the current, whilst diminution in the size of the uterus is hastened by the use of resolvents. The best means of abstracting blood is to apply leeches to the cervix. This treatment is sometimes followed by immediate relief if applied according to the rules I have laid down, namely, that it should be performed immediately after the end of the monthly period, and that a sufficient quantity of blood should be drawn to produce real depletion of the organ. The application should be repeated the following day if the quantity already drawn has been insufficient, and it should be followed the next day by a purgative chosen with reference to the constitution and temperament of the patient, season of the year, &c.

The dysmenorrhœic symptoms of congestion may require the use of

narcotics as temporary palliatives: gr. $\frac{1}{4}$ of extract of opium in a pill every six hours, or 15 drops of laudanum in an enema, or gr. $\frac{1}{6}$



FIG. 312.—Hypertrophic congestion of the cervix and os uteri in a multipara.

of extract of belladonna twice a day. Narcotics, however, as a rule are contra-indicated in the treatment of this disease. Congestion being in some degree renewed at every monthly period, the same treatment must be repeated for a considerable time; leeches to the cervix after menstruation, purgatives, rest, &c. Usually three or four applications of leeches made three or four months consecutively suffice for the treatment of chronic congestion, or an interval of two months may be left between two applications. Often, however, I have been obliged to make a greater number; no rule can be laid down. If the menstrual hæmorrhage is abundant it is sufficient to administer a purgative once or twice a few days after menstruation.

Rest, baths, vaginal irrigations favour the action of these means. Above all patients should be enjoined to give rest to the organ, *i.e.* to interrupt marital intercourse; for the absence of acute pain and the chronicity of the evil often cause this precaution to be disregarded to the injury of health and the hindrance of treatment.

If these means are insufficient derivation and revulsion should be exercised by means of blisters, or of frictions with croton oil or antimonial ointment on the hypogastrium in cases of acute and painful congestion; and by means of alkaline and sulphur baths, dry friction of the whole body, in fact by hydropathy, in the more frequent cases of chronic congestion, the least painful form of congestion but the most difficult to cure. These means do not act merely as revulsives, they also favour the resolution of the engorgement which often complicates chronic congestion. Hydropathy in such cases is very effec-

tual after leeching, purgatives and irrigations ; I mean general hydro-pathy, the local douche is always dangerous.

Sea bathing, tonics, iron, and residence in the country are necessary when the malady is quite chronic, when the patient is exhausted and anæmic, and when she has rested sufficiently long to dissipate the pain and help the action of the local means used to deplete the organ during the first period of treatment. As soon as walking can be allowed, the patient should be provided with a hypogastric belt to prevent the pain and increased congestion produced by the weight of the abdominal viscera on the womb.

ENGORGEMENT

Engorgement (infarctus) is a permanent tumefaction constituted by infiltration of organic, amorphous, liquid or semi-liquid matter between the normal anatomical elements of the organ. It should be admitted, as well as congestion and fluxion.

According to my friend and colleague M. Charles Robin,¹ the word *engorgement* means a state histologically characterised by the presence of amorphous matter, half solid or liquid, which has exuded between the anatomical elements, and which keeps them apart. This matter when liquid or half liquid holds in suspension molecular granulations, generally fatty. . . . In the half-solid condition in the hard portions near the inflamed parts it has scattered throughout it fatty nitrogenous molecular granulations, with or without those granular globules, called globules of inflammation. . . . According to the conditions which have caused the engorgement, especially in amorphous matter, it is produced or is not produced from fibro-plastic elements which, added to those existing normally in the tissue, make the engorgement pass into the chronic state of induration or hypertrophy.

As to the distinctive signs between engorgement and the other maladies characterised by tumefaction, it is sufficient to say that, although increased size is common to engorgement, fluxion, congestion, inflammation and hypertrophy, there is in engorgement an absence of the inflammatory pain so characteristic of metritis, of the dark red or violet colour of congestion, with its varicosities, of the uterine or visceral sanguineous *raptus* of fluxion, and of the consistency and induration of hypertrophy.

Lastly, why should the effect of treatment not be invoked as a final proof of the existence of uterine engorgement ? I have seen cases in which I have not used any of the means necessary in the treatment of metritis, fluxion, congestion or hypertrophy, cured under the influence of simple resolvent treatment, determining the absorption of the infiltrated fluids into the normal tissue of the organ. I remember seeing a case of tumefaction of the uterus which had lasted for several years, and which had occurred after a difficult labour. The information given me by the patient was insufficient to allow of my determining its exact nature, but the most prominent symptom was *phlegmasia alba dolens*.

¹ See *Dict. Nysten*, article *Engorgement*.

There was no symptom of metritis, hypertrophy, fluxion, nor even of congestion. The health was very good, but walking was all but impossible, and the increased size of the womb was the only apparent cause of the trouble, to which I had no hesitation in giving the name of engorgement. I could not persuade the patient to submit to treatment of any kind, but at last she agreed to try the waters of Vichy for a month. Soon afterwards she wrote me word that the uncomfortable sensation she experienced in the pelvis and the impossibility of walking disappeared daily as if by enchantment; and for several years the cure has been maintained.

Diagnosis.—Engorgement may arise spontaneously, but is often the consequence of congestion or inflammation. It may exist alone or co-exist with congestion (soft, fungous, bleeding engorgement), with hypertrophy (hard hypertrophic engorgement), and even with fluxion and inflammation; but it is rare in the latter case that the characters of these two morbid conditions do not efface those of engorgement itself. Lastly, it may depend on purely local conditions, but usually it is kept up by a diathetic affection.

Subjective symptoms.—The patient experiences a disagreeable sensation of fulness and weight in the pelvis, dragging in the loins, but less than in congestion, dragging in the groins propagated to the anterior and internal surface of the thighs, heavy pain at the sacrum and perinæum, but less than in congestion and fluxion. There is no sensation of heat in the vagina and vulva, but often pruritus. Sometimes a uterine mucous or muco-purulent secretion gives rise to leucorrhœa. Usually there is no hæmorrhage nor want of regularity in the monthly periods, the discharge is generally rather diminished than increased; engorgement may, however, produce menorrhagia or excessive menstruation. Dysmenorrhœa and menorrhagia arise from the engorgement favouring congestion and preventing its coming to a crisis as soon as usual. The symptoms in neighbouring organs are the same as in congestion. But the bladder and rectum usually tolerate engorgement better than metritis, fluxion or congestion; constipation, however, is usual. Lastly, other symptoms will be added to those naturally arising from the preceding when the patient's local and general conditions are such as to favour the development of engorgement. These conditions are: repeated deliveries or abortions, excessive intercourse, &c., as well as a rheumatic, dartrous, or scrofulous diathesis.

Objective signs.—Palpation associated with vaginal touch reveals an increased size of the organ. The fundus projects slightly beyond the pubis, unless there is marked prolapsus. The finger when in the vagino-uterine *cul-de-sac* sometimes feels the body projecting beyond the neck. The vaginal portion of the neck, as if œdematous, sometimes acquires such large proportions that the largest speculum cannot embrace it. The lips are often turned outwards in consequence of tumefaction opening the os widely in women recently delivered. One lip is often much larger than the other, but the engorgement is general, only being a little more marked on one lip than on the rest of

the neck. This swelling of the neck is not accompanied by redness, but occasionally the neck is red and congested; more frequently it is soft, but not bleeding, and pale, but in neither case is there any sensation of heat to the touch. Often the uterus is displaced or deviated, as it is after any increase of size which adds to its weight, but we must beware of thinking that displacements are the necessary results of engorgement. The sound shows an increase in the length as well as a dilatation of the uterine cavity, though this dilatation is less than in hypertrophy proper. Lastly, there may exist evident signs of various complications, *e.g.* a varicose dilatation of the veins of the neighbouring organs, of the broad ligaments, vagina, bladder and rectum, showing the co-existence of congestion with engorgement, or vaginal leucorrhœa, chronic catarrh of the bladder, &c.

Differential diagnosis.—Engorgement must be distinguished from œdema, fluxion, congestion, inflammation, hypertrophy, inflammatory induration, which may easily be confounded with it, as well as from scirrhus induration, fibroids and pregnancy, which, however, are more easily distinguished. In all these morbid conditions there is total or partial increase of size of the uterus. The elements of the differential diagnosis will be detailed and grouped in tables in the description of metritis.

Treatment.—In the first place we must remember that engorgement is curable whilst hypertrophy, with which it may easily be confounded, is not so. Further, many women who have reached the climacteric do not ask to be treated for engorgement, because pain has disappeared or can be alleviated by palliatives. This age is favorable to the tolerance of the disease, whilst youth is favorable to cure, being characterised by an activity of circulation which facilitates the absorption of the fluids interposed amongst the normal uterine elements; moreover the very functions of the uterus, menstruation and pregnancy, may be turned to account as means of cure, the retrograde evolution which takes place in the uterus after every pregnancy and after every menstrual period being very favorable to the complete resolution of the organ. There are four indications to be fulfilled:—

1. The first consists in turning aside the fluxionary movements, dissipating the congestion, and removing all causes of hyperæmia which facilitate the increase or prevent the resolution of the engorgement. It will be fulfilled by the same means already indicated as the most suitable for subduing *fluxion and congestion*. Bloodletting should be very cautiously practised, whilst cutaneous and intestinal revulsion, including hydropathy, should be resorted to.

2. The second consists in rendering the exuded fluids capable of being absorbed and in stimulating the normal processes of the organ and economy, by which means we may hope to produce this absorption. It is in a measure special to engorgement and hypertrophy. In order to bring about *absorption of the fluid infiltrated* into the normal tissue resolvent medicaments should be used, or rather medications capable of producing this result by the modifications which they bring about in the functions, and by the special activity and

direction which they give to general and local nutrition. These include the various preparations of mercury and iodine, especially iodide of potassium given internally. The same preparations as well as ointments of the iodides of sulphur and mercury may also be administered by the rectum or vagina or in frictions. A tampon saturated in a glycerole of iodide of potassium (60 grains of iodide to the ounce, Scanzoni) is an excellent application, to which we may add : warm sitz-baths twice daily, vaginal injections and wet abdominal compresses, the water used for the baths, injections and fomentations being medicated by the addition of a solution of iodine or bromine ; painting the hypogastrium with the tincture of iodine, or the application of an ointment of the iodide or bromide of potassium ; whilst internally we may prescribe the prolonged use of mild laxatives, alkaline mineral waters (Vichy, Plombières, Vals, Andabre) and iron, especially the iodide ; from the alkaline the patient may pass to chalybeate waters (Lamalou, Bussang, Oreza, Sylvanès) taking the precaution to begin by mixing one third of the iron water with two thirds of the alkaline water ; lastly, when possible, a few months should be spent at some watering place where the patient can take baths, drink the waters, and practise hydropathy simultaneously. The best in such circumstances are sulphur, alkaline and iron baths, especially those of Vichy, Vals, Boulou, Lamalou, Sylvanès and Andabre, or sea bathing and hydropathy. The Arabic treatment, the *cura famis*, has even been recommended ; it is seldom, however, that the latter is indicated.

3. The third indication consists in treating the *diathesis* which has given rise to the development of engorgement in the uterus. According to whether it be rheumatic, scrofulous or herpetic we should recommend sulphur or alkaline baths, hydropathy, sea-bathing, preparations of iodine, or arsenic in small doses occasionally interrupted, and continued long enough to produce a deep and lasting modification in the economy. In such cases one of the most energetic and efficient means is the *cauterisation* of the cervix, especially by ignipuncture. Some of the ointments enumerated, especially that of the red iodide of mercury, cause suppuration. A blister may also be applied to the cervix, but the least painful as well as the most efficient application is that of the actual cautery in the form of ignipuncture followed by baths, purgatives, alteratives, hydropathy and resolvents of every kind. By taking the precaution of making the punctures at some distance from the orifice the danger of contraction is avoided.

4. The fourth indication is *palliative treatment* consisting in alleviating pain by baths, sedatives, antispasmodics ; in treating constipation by mild laxatives, facilitating digestion by bitters and tonics, and in supporting the abdominal viscera by a hypogastric belt, when, as is frequently the case, they cause pain by their pressure upon the womb.

METRITIS

Metritis is inflammation of the uterus. It occupies an important place in uterine pathology. Inflammation of the appendages, ovaries and Fallopian tubes, and of the peri-uterine tissues (peri-uterine inflammation, peri-uterine peritonitis) are also common diseases, the reaction of which on the organism is perhaps still greater than that of metritis strictly so called. As these diseases may co-exist or succeed each other in the same patient, I think their common nature is more important than the difference of seat, and therefore I shall describe ovaritis and peri-uterine inflammation immediately after metritis.

Pathological anatomy.—The lesions produced by metritis are: increased size of the organ, infiltration of fluids into the interstitial tissue, and the consequent softening or induration of the latter, according to the period in which the disease is seen; infiltration under the serous fold facilitating detachment of the peritoneum, which is red, injected, rough, or covered with false membranes; hyperæmia of the mucous membrane and organic tissue, the capillaries and veins in the latter being gorged with blood. The mucous membrane is red and dotted, with but few traces of the arbor vitæ. In cases where the mucous membrane alone is diseased there is in addition considerable tumefaction of the membrane, the appearance of papillæ, the projection of follicular orifices surrounded by a vascular network gorged with blood, softening, epithelial denudation and even ulceration, not to speak of granulations and fungosities which may also be developed in the chronic state. Sometimes these alterations are arrested suddenly at the *os internum*, whilst the mucous membrane of the cervix is healthy or almost so. However, endometritis hardly ever exists without being accompanied by some parenchymatous metritis. Lastly, lesions depending on suppuration, phlebitis, &c., as the results and complications of inflammation in all other organs, may be observed in the uterus as a consequence of metritis. Pus is sometimes found in the uterine cavity or in the parenchyma; but suppuration is very rare in the non-puerperal condition. We must therefore ascertain whether some *débris* of membrane or placenta has not remained in the uterine cavity, or if the interstitial pus has not formed round a clot in a venous sinus or if the suppuration does not arise from a lymphatic vessel.

These lesions characterise acute and chronic metritis alike. Only in the former they disappear more quickly whether the disease terminates by resolution or suppuration. Therefore they are more frequently observed in a uterus affected with chronic inflammation. The softening and induration which characterise the first and second period of inflammation in all the tissues also characterise both periods in chronic metritis.

Scanzoni¹ has rightly distinguished “a period of *softening* or *infiltration*, in which a more or less extensive hyperæmia is observed, a

¹ *Die Chronische Metritis*. Wien, 1863., S. 35 et seq.

sero-sanguinolent infiltration of the uterine tissue which after this imbibition becomes soft, relaxed and thickened, from a second period



FIG. 313.—Chronic cystic polypous endometritis (after Virchow). The *os externum* is dilated in the form of a funnel, and the two lips are the seat of a considerable swelling. A number of Naboth's eggs, isolated or grouped together, rise above the swollen and hyperæmiated tissue (acne). To the right of the section we see that these mucous cysts do not belong only to the surface, but extend to a considerable depth. Higher up in the cervical canal the folds are strongly marked, and give rise to a series of vesicular or fleshy polypi, especially to the left, where a large pediculated pyriform one is found, which reaches almost to the *os internum*. Some small mucous cysts are also to be seen in the *os internum*. Then comes the slightly dilated cavity of the uterine body, which was filled with fluid, and the mucous membrane of which is smooth (*hydrometra levis*). A little above the *os internum* and to the left on the wall a large fibroma molluscum (*m*) is seen containing mucous cysts which before incision almost entirely stopped up the internal os. Higher up at *m'* is a smaller one, near the orifice of one of the Fallopian tubes. The uterine wall as a whole is thinner; but in *f* and *f'* it contains two interstitial myomata (fibroids) of small size. A third, rather larger, causes the projection indicated by the shining spot on the posterior portion which is not incised.

of *thickening* or *induration* in which general or partial anæmia of the organ, desiccation, firmness and hardness of the tissue are the principal lesions.

In the first period (of softening and hyperæmia) there may be excess and disturbance of the secretions of the mucous follicles, neoplasms of all kinds may be formed, especially adenomata, follicular tumours

and fibro-myomata, or a general hypertrophy of the organ may be produced. The woodcut taken from Virchow presents a striking and common example. These neoplasms may be developed in consequence of the hypertrophic tendency of the tissue, owing to local disease of the excretory canal of the glands, of the fibro-plastic elements of the mucous membrane, of the smooth fibres of the tissue, &c. Its formation, however, is favoured by inflammation. The intervention of inflammation may be recognised in the fact that, in place of being formed on one point or on one tissue only, the neoplasms are developed at every point and on all the tissues at once.

In the second stage (induration), in place of presenting an infiltration of amorphous matter as in engorgement, the tissue of the uterus is hardened. It is the index of resolution, but of incomplete resolution. The hyperæmia and softening disappear, the plastic inflammatory activity is extinguished; but the absorption of the neoplastic elements is not complete; it does not extend to the connective tissue as to the other elements. Therefore induration persists as the trace of proliferation of this fibrillar tissue; there remains in the uterus a network of fibrous tissue analogous to cicatricial tissue.

According to Scanzoni, independently of this induration of tissue producing partial or general anæmia of the organ, the most important anatomical modification in chronic metritis is the congestion of the engorged and dilated vessels. This congestion is due to the disturbances observed in the circulation of the neighbouring organs, and to the want of tone in the walls of the vessels which do not present sufficient resistance to regulate the circulation. It is evident that this congestion is more considerable during the period of softening, but to some extent it persists during the period of induration, especially at the commencement. *This congestion is especially venous*, and is the most difficult to dissipate; therefore Scanzoni, generalising too much, regarded chronic metritis as incurable.

It is rare for the anatomical alterations to be disseminated uniformly through the various portions of the uterus, and for them to reach all, especially when the metritis is chronic. In the latter case we not only ascertain that these lesions may be limited to the body or to the neck of the organ, but usually also, according to the ingenious comparison of Gallard (*Leçons cliniques sur les maladies des femmes*, pp. 143, 153, 172, &c., Paris, 1873), in the uterus as in the heart, inflammation may reach the external or serous envelope, the internal or mucous covering, and the intermediate or parenchymatous tissue. It is more uncommon to see inflammatory lesions affecting exclusively the muscular tissue than the mucous or serous tissue, except in the acute stage; they may even sometimes exclusively affect the cellular tissue interposed between the organ and its serous covering (parametritis). The principal and characteristic alterations, however, may be limited sometimes to the mucous membrane (endometritis or mucous metritis), sometimes to the muscular tissue, whilst reacting on the peritoneum or being somewhat propagated to the internal membrane (idiometritis or parenchymatous metritis).

The majority of pathologists have not pushed their researches further as to the diversity of the alterations which may be produced, and yet it seems to me that in place of being satisfied with distinguishing mucous from parenchymatous metritis, it is necessary further to determine the element principally affected or exclusively altered in each of these tissues according to the seat of the evil.

This last division, founded on the histological localisation of the morbid product,¹ is perhaps the most important to know, as regards not only the histological element affected by inflammation, but also the pathological evolution which this element undergoes, and which more or less profoundly modifies its structure and functions, sometimes in one direction, sometimes in another. The agreement between each histological alteration and each symptomatic table, subjective and objective, is the best source of pathological determination and therapeutic indication. Therefore it may be said that the *diversity of histological alteration answers to the diversity of nature of the metritis*.

If we have to do with a case of endometritis we sometimes find the alteration very superficial, limited to the epithelium, which may be now removed or destroyed by an erosion, now stimulated to proliferation, which gives to the membrane a granulated aspect (grey granulations of small superficial dimensions); at other times the alteration will invade the glands, increasing the secretion (leucorrhœa), or exciting a proliferation capable of producing various kinds of tumours (granulations with a hole, or a trace of one, at the projecting portion, a cyst, Naboth's eggs, adenomata, follicular polypi sessile or pediculated). It gains in extent, reaching the vascular system, sometimes simply congesting it (venous congestion of troublesome persistency), sometimes disposing the superficial congested network to lacerations and hæmorrhage (hæmorrhagiparous endometritis), or it determines by a congestion, which is the result of persistent and localised erection, small fungous tumours or bleeding granulations having a more or less distant analogy to a hæmorrhoidal tumour or a tumour partly erectile. At other times the alteration while producing superficial lesions gains in depth, affecting specially the dermis of the mucous membrane when, owing to its proliferative or destructive tendency, it produces true papillary granulations, more or less voluminous and confluent, sometimes hard, sometimes fungous (if they are associated with excessive vascularity), or on the contrary with more or less large and deep ulcers of variable form, according to the diathesis on which they depend. If the alteration affects the cellular tissue, the elements of the connective tissue, and the fibro-plastic or embryonic elements, the fusiform bodies, &c., the proliferation of these elements may give rise to superficial granular vegetating hypertrophy, simple, fungous or polypiform, or to deep hypertrophy affecting the whole thickness of the mucous mem-

¹ *Mémoire sur la diversité des altérations histologiques dans l'inflammation de l'utérus*, presented to the Académie des Sciences, May 20, 1877, and read before the French Association for the Advancement of Science at the Montpellier meeting, August, 1879.

brane and the whole extent of one region; for instance, one segment of the body, one of the lips of the cervix, a general hypertrophy, leading in the first period to softening, and later on to induration. As for suppurative phlebitis, lymphangitis, peri-uterine or retro-uterine adenitis, they are met with as serious complications of certain kinds of metritis, especially of puerperal metritis or (adenitis especially) as an indication of ulceration persistent for a long time over a considerable extent of the mucous membrane, necessitating special applications to this mucous membrane, and often keeping up in patients pain which till now has not been accounted for, but the interpretation of which appears to me now undoubted.

If we have to do with parenchymatous metritis without superficial anatomical lesions which are necessarily absent, we find according to the case pathological alterations analogous to those just described in the thickness of the mucous membrane, affecting the like histological elements, the vascular system, the fibro-plastic elements, the laminar tissue, &c., and special alterations affecting the constitutive element *par excellence* of the uterine muscular tissue, I mean the smooth fibre. The principal anatomical alterations of the smooth muscular fibre are either a simple hypertrophy without localised and limited proliferation (hypertrophic parenchymatous metritis), or a special localised proliferation, producing globular tumours, simple or multiple (fibroids, fibromata, myomata, leiomyomata), among which the myomata (proliferations of the smooth muscular fibres) should be distinguished from fibromata or fibroids or fibro-plastic tumours (proliferation of connective tissue and embryonic fibro-plastic elements), both possibly being interstitial, subserous, submucous (sessile or pediculated). Others consist in a softening with serous infiltration or fatty degeneration (softening parenchymatous metritis). Others again consist in a more or less painful contraction of these fibres with consecutive retraction or induration (indurated parenchymatous metritis, retractile, often painful).—As for the alterations of the cellular and especially of the vascular system, they resemble those of the same elements in the mucous membrane: there may be, though rarely, suppuration and even an abscess; the same venous congestion is produced, associated with a venous congestion coexisting in the mucous membrane, sharing in the same characteristics of incurability, redoubled when the venous congestion extends to the two principal histological layers of the uterus. In the other organic alterations there is nothing which, from the point of view of curability, is beyond the power of medical art.

Divisions.—The divisions that have been established between the various kinds of metritis depend on the meaning attached to the term *metritis* in the domain of uterine pathology.

1. With regard to its *extent*, it may be *general* or *limited* according to whether it affects the whole uterus or only one of its parts.

2. As to its *localisation* metritis may be *total* or *partial*. Some physicians designate metritis of the cervix by the term *external metritis*. It is certain that partial inflammation may be limited to the

neck or to the body, may affect either the parenchyma or the mucous membrane.

3. With regard to its *progress*, metritis may be in both cases *acute*, *subacute*, or *chronic*. That occurring after delivery is generally acute. Chronic metritis is the form most commonly met with in the non-puerperal state, the chronic form being assumed even from the beginning. The acute or subacute form, however, is sometimes met with, especially when the metritis is due to traumatism: excessive intercourse, dysmenorrhœa, the fatigue attending a wedding tour, the sudden suppression of menstruation, &c. Mikschik has published an interesting work on acute metritis in the non-puerperal state.¹ It is based on 18 cases, 12 of which were women who had never conceived: all fell suddenly ill during menstruation; the majority had taken cold, and in 6 there had been a traumatism at that time. Except where complications exist in connection with the appendages cure is always obtained. This form of metritis according to Mikschik is rare, only occurring twice in every 100 cases. Tilt² is of the same opinion, and so am I. Slawjansky's³ opinion that cholera can develop hæmorrhagiparous endometritis has never been confirmed.

4. With regard to the diversity of *causes*, *metritis* has been divided into *puerperal* and *non-puerperal*. Chomel goes further, distinguishing puerperal metritis, which is developed immediately after delivery, from *post-puerperal* metritis developed some days later. I cannot see any other difference between puerperal and non-puerperal metritis than that resulting from the extreme tendency of the former to suppuration and from the frequency of complications, such as lymphangitis, phlebitis, peritonitis, &c., which increase the gravity of the prognosis.

I shall not here refer to the question of puerperal fever, which has not been settled. In any case it must be admitted that if puerperal metritis has been included in the description of puerperal fever and has altered its features, it has also been proved that newly delivered women may succumb to serious fever, which often coincides with pathological alterations in the uterus as in other organs, indeed, more than in other organs, but which may also leave no trace in the womb, as has been proved by autopsies,⁴ and which consequently is not merely

¹ Acute metritis in non-pregnant women, *Zeitschr. der Gesellsch. der Aerzte zu Wien*, 1855, Bd. xi, S. 500.

² *Transact. of the Obstetric Soc.*, vol. xiii, p. 197.

³ *Archiv f. Gynaekologie*, Bd. iv, S. 212.

⁴ Many physicians believe that puerperal fever is an essential disease characterised by an alteration in the blood. To sum up the facts on which their opinion is based, it is sufficient to refer to the case of the midwife who succumbed to puerperal fever, or at least to a disease which presented all the characters of it, although she was a virgin and was not menstruating at the time. I may also remark that Lorain in his thesis (*De l'état puerpéral chez le fœtus et le nouveau-né*. Paris, 1855) has shown the solidarity existing in this respect between the mother and child. Besides, it is doubtless the same with puerperal fever as with contagious erysipelas and purulent infection. 1. It may be developed in a woman (recently delivered) from uterine phlebitis or angioleucitis, from the absorption of pus, from suppurative metro-peritonitis, from ovaritis, from an abscess of the broad ligaments, from a consecutive purulent infection. 2. It may afterwards be propagated by the miasma to

a fever symptomatic of metritis or uterine phlebitis. However, it is not with the existence of puerperal fever but of puerperal metritis that we have to do. As the latter cannot be disputed, the only question to be decided is, whether puerperal metritis and non-puerperal uterine inflammation are not the same disease with complications.

5. *Non-puerperal* metritis may be divided into *traumatic* metritis and *diathetic* or specific metritis, of which there are various kinds: rheumatoid, catarrhal, diphtheritic, &c.

6. With regard to the *termination* metritis has been divided into *leucorrhœic*, *suppurative*, *ulcerous*, *gangrenous*, *granular*, *fungous*, *softening*, *congestive*, *hypertrophic*, *indurated*, &c.

7. From the point of view of *histological diversity* the term *endometritis* is used to denote inflammation affecting the mucous membrane; some writers have also called it internal or catarrhal metritis, wrongly confounding it with uterine catarrh. *Idiometritis* (Hervieux) or parenchymatous metritis is used to describe inflammation of the muscular tissue of the organ; *parametritis* (Matthews Duncan) to denote inflammation of the cellular tissue surrounding the uterus; and *exometritis* inflammation of the peritoneal covering which is easily propagated to the broad ligaments, whilst it frequently spares the uterine tissue.

8. With regard to the *localisation of the pathological process on one of the constitutive elements* of the principal tissues of the organ, distinctions have been established between the various histological varieties which seem to me the most important of all; the principal are: glandular or *follicular*, *granular*, *fungous*, *vascular*, *hæmorrhagic*, *congestive*, *venous*, *proliferant*, *hypertrophic*, *softening*, *indurated*, &c. The importance of this classification, based upon pathological anatomy, is recognised in the diagnosis, prognosis and treatment, and really dominates the pathology of metritis.

9. With regard to complications, metritis may be *simple* or *complex*. The complications are inflammation of the ovary, of the Fallopian tube, peri-uterine inflammation, peritonitis, abscesses either peri-uterine, pelvic or iliac; lastly, lymphangitis, phlebitis, phlegmasia alba dolens and purulent infection, which are the most serious complications of metritis, at least of puerperal metritis.

Causes.—Metritis, like all other uterine diseases, occurs most frequently during the period of greatest sexual activity. According to Nonat the greatest number of uterine inflammations is from fifteen to which it has given birth, and determine septicæmia in puerperal women or in those who have been operated on in a hospital. 3. It may even, in women of the latter class, be localised on the uterus, this organ being predisposed by recent delivery, or being already a centre of suppuration. 4. It is all the more likely to end fatally in that it attacks patients doubly with septicæmia: by direct purulent infection from the uterus, and by indirect or epidemic infection. To sum up, I agree with Hervieux (*Traité clinique et pratique des maladies puerpérales suites des couches*, p. 82. Paris, 1870) that a midwifery hospital, permanently occupied, is a productive cause of miasma, and that the propagation of this miasma by infection or contagion produces puerperal poison and puerperal fever.

forty-five years, and the age at which women are most exposed to metritis is from twenty to thirty years.

Debilitated constitutions and lymphatic temperaments seem more disposed than others to metritis. The uterus seems specially disposed to become inflamed in certain women, from a kind of weakness or natural susceptibility, according to Henry Bennet,¹ but I think there is a natural susceptibility of the organ which, according to Nonat, sometimes runs in families, and which predisposes to other uterine diseases as well as to metritis.

It is difficult to decide whether the kind of life led by the poor or rich, the action of certain kinds of food (coffee), certain garments (stays), climate (damp, sudden or prolonged cold), certain diseases (*e.g.* diathetic conditions, cardiac, gastric, pulmonary or hepatic diseases), certain medicaments (vaginal injections or emmenagogues²) predispose to metritis.

The influence of *determining causes* is more evident. All that congests or irritates the organ may develop inflammation of the uterus. Menstrual disorders, and especially the sudden suppression of the catamenia, abortion, natural and artificial delivery, including subsequent accidents such as retention of the placenta, laceration of the cervix, disappearance of the lochia or milk, inflammation of the placental wound, arrested histological involution of the uterus, &c., are the most frequent causes. Also excessive intercourse, especially during wedding tours, rising too soon after a confinement or resuming marital intercourse too early, disproportion in the size of the penis, masturbation, the prolonged presence of foreign bodies in the vagina, such as pessaries or sponges, the uterine douche, the introduction of dilating bodies to induce abortion, drawing the uterus down to facilitate the extirpation of a polypus, incision of the cervix or forced dilatation, the use of the sound, the ill-timed introduction of an intra-uterine stem, frequent cauterisation of the cervix, especially when done in the consulting room and without the use of the precautions I have indicated, may cause metritis.

Other traumatisms, such as a fall on the pelvis or abdomen, a blow, shock or wound received on the hypogastrium or in the vagina, may also be determining causes of metritis; for in spite of its internal position in the pelvic cavity, and the thickness of the hard and soft parts protecting it, the uterus is exposed not only to indirect but occasionally to direct traumatisms.³

¹ Op. cit., p. 34.

² Künding (*Schweiz. Zeitsch.*, 1839, Bd. i, 2^e Heft) has seen a woman who, after the use of savin and other abortives, presented symptoms of chronic metritis and peritonitis. At death, which occurred in the forty-first week of pregnancy from exhaustion, the uterus was found adherent to the neighbouring parts and had not increased in thickness as in pregnancy. As for the fœtus it died in the seventh month.

³ Tacheron, *Annales d'Hygiène*, April, 1834; *Revue médicale*, 1835, t. i, p. 117; *Gazette médicale*, 1841, p. 219; *Ibid.*, 1845, p. 716; Planchon, *Traité complet de l'opération césarienne*, p. 77; Deneux, *Essai sur les ruptures de la matrice*, p. 35; Czazewski, *Journal de Malgaigne*, Dec., 1846; *Revue médicale*, 1841, t. iii, p. 389; *Ibid.*, 1844, t. iii, p. 83; *Journal de médecine*, 1786, t. lxvi,

Poma¹ asserts that he has seen a case of metritis caused by the introduction of a leech into the uterus; the disease did not decline for a fortnight till after the expulsion of a large clot containing a leech in good condition.

Inflammation already existing in neighbouring organs may be propagated to the uterus, such as ovaritis, inflammation of the Fallopian tubes, vaginitis and peri-uterine phlegmons, which act as tumours hindering the circulation, as centres of fluxion or congestion, and especially as seats for the propagation of inflammation by continuity. As for the rectum and bladder, the inflammation is propagated rather from the uterus towards these organs than from these organs towards the uterus.

Course.—It may be either acute or chronic, sometimes even sub-acute.

The *acute stage* may be very serious, progressing rapidly, terminating by suppuration or gangrene, or be complicated by phlebitis, lymphangitis or by purulent or putrid absorption. These terminations and complications are peculiar to the puerperal state. Other complications occur frequently in non-puerperal acute metritis. Inflammation of the peritoneum, of the annexes, and peri-uterine inflammation must be placed in the first rank. Metritis, indeed, in place of being simple is frequently metro-peritonitis, the most superficial layer of the uterine tissue and the serous fold covering it being either simultaneously inflamed from the beginning or the inflammation may have extended from the muscular to the serous tissue owing to want of care and prudence on the part of the patient. It is the same with inflammation of the annexes, especially with ovaritis, which is frequently met with, and sometimes in a more marked degree than the concomitant metritis. Peri-uterine inflammation is a complication which is not very rare, and which aggravates metritis, necessitating more energetic treatment.

When inflammation of the mucous membrane has reached such a degree that the membrane is ulcerated at several points and stripped of its epithelium, these bleeding surfaces may, though rarely, contract adhesions at points of contact.²

At the *os internum* the contact is so close, that the alteration of the mucous membrane may produce definite occlusion of this orifice. This accident is usually prevented by the continual interposition of mucus between the surfaces of the mucous membrane of the isthmus. The

p. 354; Emmet, *Principles and Practice of Gynecology*, 1879; *Gazette médicale*, 1836, p. 536; *Ibid.*, 1834, p. 87; *Ibid.*, 1835, p. 265; *Ibid.*, 1839, p. 185; *Observateur des Sciences médicales de Marseille*, 1822, t. iv, p. 251; *Deutsche Klinik*, 1862, No. 11; Larcher, *Archiv. gén. de médecine*, 1869.

¹ *Gazz. di Milano*, 1846, No. 38.

² I have seen three cases of the kind in autopsies on aged women, another in a young woman, and one in a patient affected with syphilis. The occlusion of the orifice from such adhesions is not rare in old women. I have an example of the kind in one of my patients at present, a young woman. Ulcerations of the *os externum* from the lower portion of the cervical canal have contracted adhesions, and caused obliteration after three or four years of continued inflammation.

length, however, of the isthmus may dispose it to be obliterated more easily. This is what sometimes happens when internal metritis has lasted a long time, and when the patient has reached an age when the natural contraction of this orifice and even its obliteration are not rare. There results, as may readily be supposed, a distension of the cavity of the body, owing to the mucus or muco-pus abnormally retained. The body then takes a more and more globular form, and its walls may be thinned. The external os may also become obliterated, though more rarely. Its two lips are then united by a membranous adhesion or by a fibro-cellular band. The cavity of the neck is distended, the mucus secreted is accumulated, the internal os is enlarged, and the cavities of the body and neck communicate freely with each other. One of the most interesting cases of this kind is that published by Voisin of Limoges.¹

Inflammation of the peritoneum has a greater tendency even than that of the uterine mucous membrane to produce consecutive adhesions. Therefore metritis when complicated with peritonitis cannot be subdued too energetically; for the (almost fatal) consequences of the latter are adhesions between the peritoneal fold covering the uterus and that covering its annexes or the neighbouring organs. Hence, if the womb be deviated or flexed, fixity of this organ in an abnormal situation may indefinitely keep up the diseases which are the consequence of this situation, such as engorgement, congestion, dysmenorrhœa, &c. Hence also adhesions of the womb with the rectum, and the double hindrance to the functions of the uterus and this intestine, as well as loss of mobility of the Fallopian tube and its fimbriated extremity, the union of the uterus sometimes with this organ, sometimes with the ovary, pains produced by the disturbance of their functions, especially at the menstrual periods, the impossibility of ovulation and the transport of the ovum in the normal manner, and consequently sterility.

When metritis pursues its course without being aggravated by any of these complications, it terminates like all inflammations by resolution. The latter may be complete or incomplete. Even when complete, the inflammatory symptoms do not commence to decrease for seven or eight days, and cannot disappear under a fortnight. Usually it is not till the end of the third week that we can hope for the disappearance of the evil. Complete resolution cannot be depended on before the return of the next menstrual period. If it occur normally cure may be considered as ensured. If, however, fluxion and uterine congestion produce pain and especially if they rekindle fever, resolution is not complete; a relapse is to be feared or the transition to the chronic state. Incomplete resolution is usually the consequence of bad treatment or want of prudence on the part of the patient, as for example, rising too soon, walking, resuming ordinary work, &c.; but it depends also on the constitution of the patients, women of lymphatic temperament, weak constitution, deteriorated organisation, and

¹ *Gazette médicale de Paris*, 1835, p. 444.—See pp. 272, 273, figs. 211, 212.

those who are already affected with some disease, especially a diathetic disease, such as scrofula, being specially disposed to it.

The chronic form of uterine inflammation, whether it result from the acute state, or whether it have assumed this form from the beginning, may recommence under the influence of various causes especially traumatic, and lead, although rarely, to one of the fatal terminations or one of the complications of the acute state. Or it may persist indefinitely, producing softening of the organ, favouring the indefinite duration of the leucorrhœa, facilitating the development of granulations and fungosities, causing the uterine tissue to pass from softening to total or partial induration by the organisation of the plasma exuded and interposed in its elements, sometimes producing a simple increase of nutrition and consequent hypertrophy, and not apparently capable of spontaneous cure. Cure may be apparent, *i.e.* an amelioration may take place, so far as disappearance of the subjective symptoms of the disease is concerned; and patients may think themselves perfectly cured, whilst examination shows that lesions are still considerable; this improvement continues sometimes for years, till under the influence of some external cause all the former symptoms reappear with more or less intensity.¹ Even when cured, engorgement and other ineffaceable traces of its existence may be left behind. The principal anatomical cause of this rarity in the cure of chronic metritis is the persistence of the vascular dilatation kept up by too long a congestion and by the loss of the normal tonicity of the arterial and venous walls which is the consequence of it; therefore it is especially this particular form of metritis (with venous congestion) which may be considered incurable. The curability of the majority of other forms, after a more or less prolonged treatment is an ascertained fact.

Diagnosis—subjective signs.—The commencement of *acute metritis*, especially of puerperal metritis, is marked by more or less intense and prolonged shivering. This shivering may be wanting in non-puerperal acute metritis, but not so often as Aran says. It is followed by fever, often by the suspension of the lochiæ, and by continuous hypogastric pain, differing from uterine colics and extending to the iliac regions, especially to the left. Fever is never absent in acute metritis. Whenever the pulse exceeds 100 or 120, we must be on our guard; the cause of the fever must be accounted for and treated from the first. If this fever is accompanied by erratic shivering and later on by sweating or vomiting, we must be doubly careful, for these symptoms rarely fail to announce phlebitis.

Often the local phenomena precede the general symptoms. Of all these phenomena the most marked is hypogastric pain—a very acute pain, quite different from the uterine colics which follow delivery, being continuous, and becoming worse every hour, occurring in non-puerperal acute metritis as well as in puerperal metritis. This may be accompanied, especially in internal metritis, with real expulsive colics, forcing patients to roll themselves into a ball to prevent all tension of

¹ Scanzoni, *op. cit.*, p. 189, et seq.

the abdominal muscles, which, as well as the least pressure, suffices to increase the pain. Arterial pulsation is also often present, which the physician may occasionally ascertain by placing the finger in the utero-vaginal sinus, to the right and left of the cervix, as deeply as possible.

This pain is propagated into the iliac regions, especially on the left side, all round the uterus, to the whole hypogastrium, or towards the rectum, the vagina, the bladder, according to whether the peritoneum or the neighbouring organs participate most in the inflammation. It radiates towards the groins, the thighs, the umbilicus, the sacrum and the loins. It may or may not be accompanied by pelvic heaviness, and in that it differs from congestive pain. The patient experiences a burning heat in the hypogastrium, as well as at the vagina and vulva. This heat is by its nature and intensity characteristic of acute metritis. There is no discharge from the vagina, the lochiæ are usually suppressed; soon afterwards a mucous discharge appears, which rapidly becomes mucoso-purulent, or even sanguinolent in cases of simple acute metritis. In puerperal metritis the discharge is grey, purulent, often foetid. When metritis appears in the midst of menstruation the catamenia cease suddenly. When it exists before the arrival of the menses it is aggravated by the fluxion which the menstrual period brings back, all the more so that there is more frequently suppression of the periodical sanguineous discharge than menorrhagia.

The neighbouring symptoms are pain in micturition, urine red, scanty and scalding; generally constipation, sometimes a glairy diarrhœa, with straining, tenesmus and burning pain.

The general symptoms are: fever, which never fails, and which lasts till resolution of the metritis, or till it has passed into a chronic state; anorexia, foul tongue, thirst, hiccough, sometimes vomiting, which may be a symptom of peritonitis. Lastly, more serious general symptoms, a small as well as frequent pulse, profuse clammy perspiration, delirium, &c., may be added to the preceding, and increase the gravity of the prognosis, for they are the signs of very serious complications, such as purulent absorption or puerperal fever. The same signs, in a less degree, characterise non-puerperal acute metritis.

In the *chronic state* metritis is manifested by almost identical signs, though less serious, especially the local symptoms, which may be concealed by the predominance of general symptoms, occasionally to such a point that patients may be mistaken as to the seat and nature of their malady. However, there is always pain in the regions already indicated, as well as in the loins and its various radiations, sometimes even radiation towards the coccyx, known as coccygodynia (I have never observed it); but the hypogastric and left iliac pains are the most prominent. This left iliac pain usually accompanies hypogastric pain, and sometimes even, when metritis has passed into the chronic state, it affects the patient more than hypogastric pain, which in a measure is effaced by it. It is difficult of explanation, but it is a very frequent, if not a constant fact; whether it is that the rectum or sigmoid flexure congests the left appendages more than the right, or

that the latter, especially the ovary, have more tendency to participate in inflammation, as in the male orchitis is developed more frequently to the left, or that the fundus of the uterus being inclined to the right, produces pain by the dragging of the left appendages.

Pain is aggravated by pressure, constriction, walking, sometimes by the least shock, *e. g.* that produced by a false step or going down stairs. In all cases of uterine or peri-uterine inflammation patients invariably sit down cautiously, and instinctively protect the hypogastrium from the smallest shock. The pain is increased still more by walking, leaping, the shaking of a carriage, riding, sudden movements, coitus, especially when the penis impinges too strongly against the cervix. It is also increased by constipation and by fulness of the rectum and bladder. This pain is continuous and dull; it is heavy, and accompanied by a feeling of discomfort in the pelvic cavity, weight at the perinæum, anus and sacrum; but it is also accompanied by shooting pains, like those which characterise the pain of acute metritis, recurring at longer or shorter intervals, and with arterial pulsation often felt by the patients, and sometimes by the physician to the right or left of the cervix. There is a persistent and uncomfortable heat in the abdomen, and especially in the uterine region, often extending to the vulva, with vulval pruritus, &c.

Sometimes the vulva and vagina are dry; at other times there is leucorrhœa, rarely abundant, muco-purulent or quite purulent, more or less acrid, but always less so than in the acute form. It is seldom accompanied by vaginitis: the latter usually only complicates the superficial inflammation of the cervix, which is a natural extension of it. Sometimes there are no menstrual disorders, excepting slight pains at the monthly period. At other times there are dysmenorrhœa, uterine colics at every monthly period, increased hypogastric and inguinal pains, as well as lumbar pain. At other times there are disorders, consisting chiefly in irregularities; irregularity in the monthly period and in the quantity of blood evacuated. With regard to the irregularity of recurrence, the menses sometimes recur too seldom (symptom of parenchymatous metritis), sometimes too frequently (common symptom of endometritis). With regard to the irregular quantity, they may be diminished or suppressed (symptom of parenchymatous metritis), or increased to the point of producing menorrhagia and even metrorrhagia (phenomena occurring in cases of general metritis, and especially in those of endometritis).

Sterility is an almost unavoidable consequence of metritis: sometimes mechanical, from obliteration of the orifices, adhesions, fixity, vicious positions contracted by the Fallopian tubes, the ovaries and the uterus in their reciprocal relations, or in their connections with other organs; often a vital consequence, if I may so express myself, from the condition in which the state of inflammation places the uterus, rendering it impossible for it to accomplish the numerous and delicate physiological acts which preside at fecundation, conception, pregnancy. Chronic metritis is therefore an obstacle to conception. This rule has

only a few exceptions; and even then pregnancy is interrupted at an early stage by an abortion.

Is it, however, possible for metritis to be developed or increased during the course of a pregnancy? At first sight it would seem that it was not; and the fact is that inflammation is developed very rarely in such circumstances; I have, however, collected a small number of examples. I have seen a case of metritis occur at the beginning of a pregnancy soon producing abortion, and followed by the evacuation of fetid pus. Purulent infection was manifested soon afterwards and the patient succumbed.

The neighbouring symptoms recall those of acute metritis and uterine congestion: on the side of the rectum, hæmorrhoids, constipation, with fictitious and troublesome desire to go to stool, tenesmus, sometimes even glairy enteritis; on the side of the bladder, frequent desire for micturition accompanied by heat, &c.

In short the general symptoms are often so developed that they throw the others into the shade, and may mislead patients as to the seat and reality of the evil. Patients often tell their physician of their weakness, headaches and dyspepsia, and are surprised to discover that the real seat of the trouble is the womb, and that these troublesome phenomena which have tormented them and made them lose flesh for so many months, or even years, are only symptoms of chronic metritis. The disorders of the digestive organs are vomiting, anorexia and especially dyspepsia. Nausea may be considered a characteristic symptom of inflammation of the body of the uterus. The nervous troubles assume all the forms of hysteria, not that they depend on real hysteria, which may though seldom coincide with chronic metritis, but because the alterations of the functions of the nervous system, those especially of which the uterus is the starting-point, most frequently take this character. These are abdominal pains, gastralgia, pharyngeal constriction, intercostal neuralgia, which may make patients think that they have a cardiac or pulmonary disease, headaches or the facial neuralgia of a more or less limited kind, and lastly what is called the *hysterical nail* (*clou hystérique*); visceral neurosis may exist; neuralgia in the limbs is rare. These disorders of the digestive and nervous systems produce impoverishment of blood, anæmia, chloro-anæmia and more or less debility.

Objective signs.—Pain, tumefaction, heat, redness, all the objective signs of inflammation, are easily seen in metritis, and as they help to distinguish metritis from other morbid states of the uterus with which they may be confounded, it is important to be able to determine with precision their existence in the inflamed uterus.

The pain is well marked; it has its seat in the uterus. It exists in puerperal and non-puerperal metritis, in acute and chronic inflammation, in metritis of the mucous membrane as well as of the parenchyma; in the latter especially the diagnosis of it is important, as the absence of purulent leucorrhœa might throw doubts on the existence of the metritis.

Pressure on the hypogastrium and left iliac fossa allows the real

seat of pain to be determined; whilst pressure exercised with the finger on the body or neck provokes pain in the uterus to the exclusion of all the neighbouring parts. The association of hypogastric palpation with vaginal touch is necessary to determine exactly the seat and nature of the pain. It is important to distinguish the pain elicited by movements and transmitted to the uterus from that produced by pressure exercised on the organ. Very often pain is caused by pressing on a congested or deviated uterus, whilst none is caused by pressing on a uterus affected with chronic inflammation, especially if owing to its elevation or some other cause it is not easily reached. Pressure upon the cervix from the finger introduced into the vagina, either upwards or from side to side, will often give great pain, however slightly the organ is congested, deviated or flexed, or if the appendages or neighbouring organs be the seat of some disease. If the touch is practised in the same way in a case of chronic metritis in a woman of average sensibility, whose peri-uterine organs are in good condition, pain may not be elicited; that is because the uterus rises, swings from side to side and yields easily to the pressure of the finger, and does not encounter any painful organ in its movements. If, on the contrary, the uterus is retained in the pelvis by methodic hypogastric pressure whilst the anterior or posterior surface of the cervix is reached by vaginal or rectal touch, the uterus is held between the hand and finger, and it alone is subjected to pressure. Now, even in cases of chronic metritis, whilst pressure on all the neighbouring points fails to produce pain, that exercised on the uterus determines, on the contrary, sudden acute pain, which extorts a cry from the patient, and which is comparable to that produced by the slightest pressure on an abscess or any inflamed and painful part. This precision in determining the seat of pain is of first importance in the diagnosis and treatment of chronic metritis.

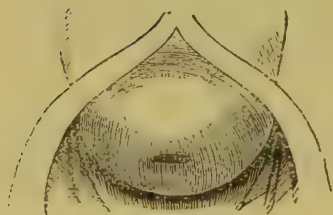


FIG. 314.—Cervix uteri in a virgin (after H. Bennet).

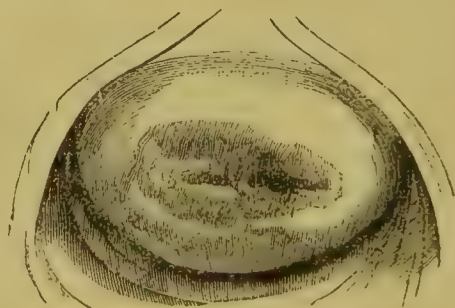


FIG. 315.—Cervix uteri in a virgin, inflamed and ulcerated, normal linear form (after H. Bennet).

The tumour or increased size of the organ is easily ascertained by the same means. In puerperal metritis this tumefaction is considerable: the uterus is large at the time; when inflammation begins retro-evolution is arrested, and the afflux of fluids contributes to preserve the dimensions that it was on the point of losing. In non-puerperal

metritis, acute or chronic, the uterus in spite of its tumefaction does not always pass beyond the pubis. Sometimes, however, in forty-eight hours it may reach the size of an ostrich egg. It is important to notice that, in spite of this increase of size, the uterus preserves its mobility. This tumefaction determines a swelling in the hypogastrium, varying with the patient and the species of metritis. In parenchymatous metritis the abdomen is moderately distended. Whilst in endometritis there is a distension of the lower half of the abdomen due to reflex tympanitis very variable in intensity. The tumefaction of the cervix and body, ascertained by the combination of rectal and vaginal touch with hypogastric palpation, leave no doubt as to the increased size of the uterus. This tumefaction is sometimes so great as to cause descent of the organ. It may be measured by seizing the uterus between the finger of one hand introduced into the vagina and the palmar surface of the other hand pressing the hypogastrium methodically. Lastly, the vaginal portion of the neck is rounded, projecting, and the os gaping; this tendency is specially remarkable in the case of metritis of the cervix. In the virgin, the cervix although tumefied, sometimes preserves an almost conical form; even when the inflammation does not reach it, it does not share in the increased size of the rest of the organ, so that by simple inspection we might be misled as to the real state of the uterus. The os, which is exceptionally circular on an inflamed virginal cervix, is increased in size, and the inequality in the tumefaction of the tissue circumscribing it gives rise to kinds of radiating folds starting from the centre and diverging at a short distance from the border. In the married woman it is rounder, assuming the form of a cone with its base downwards; its lips are projecting and irregular. In the multipara it is infinitely more marked, and not only is the circumference of the cervix irregular, but it is marked by deep cicatrices, traces of lacerations which have occurred at delivery.¹

The heat is intense, especially in newly-delivered women, in whom it may be perceived by placing the hand on the abdomen. In other cases of acute metritis it may be less; but if we place the hand flat on the abdomen above the umbilicus, descending gradually to the pubis so as to pass over the hypogastric and iliac regions slowly, we cannot fail to perceive it, especially at the hypogastrium; but it is much more appreciable in the vagina and on the vaginal portion of the cervix. Sometimes it is accompanied by dryness; at other times, on the contrary, by a more or less abundant secretion.

The redness is not easily perceived at first; for there are patients to whom touch is so painful as to be almost impracticable; and therefore the introduction of the speculum is impossible for the time. However, these cases are rare, and we should have recourse to these means of exploration as soon as possible, in the first place, because they are necessary to confirm the diagnosis, and because as regards treatment, it is important to know whether we have to do with a case

¹ Fig. 312, p. 471, will give an idea of the aspect which the cervix frequently presents under such circumstances.

of metritis, peritonitis, peri-uterine phlegmon, &c.; in the second place, because we cannot otherwise apply the most efficient means of treatment, viz. leeches. Besides, by taking the precautions indicated elsewhere in introducing the speculum it can be used without much pain, and the local application of leeches will alleviate the suffering sooner than anything else. The redness is less dark and venous than in congestion, but it is very pronounced and accompanied by a disposition of the mucous membrane to bleed on the slightest friction. The blood is often red, vermillion, very different from that which flows from the congested cervix. Sometimes without having even wiped the cervix we perceive the surface deprived of epithelium, red, bleeding, with real erosions, exulcerations, and even ulcerations of variable form, granular fungus, &c. When the vaginal portion of the cervix is not diseased, but when the mucous membrane of the uterine cavity is inflamed, and when this inflammation extends to near the orifice, if we look through the os (the eversion of the swollen irregular lips facilitates the observation) we shall see that this mucous membrane is of a bright red, contrasting singularly with its usual colour.

When the metritis is accompanied by more or less intense vaginitis, the surface of the vagina touching the cervix is, like it, bright red and covered with small granulations either confluent (granular vaginitis) or discrete (folliculitis of the cervix): whilst redness, projecting papillæ, and superficial erosions may extend to the internal surface of the labia majora.

A leucorrhœic discharge, not only vaginal but uterine, may or may not accompany metritis, and we must beware of looking upon this leucorrhœa as well as upon the other symptoms just referred to as a real sign of metritis; for all these symptoms may exist without it and it may exist without them. With regard to the leucorrhœa we must ascertain if the discharge is superficial and due to granulations, follicular or otherwise, of the vaginal portion; or if it is profound, whether it comes from the cavity of the neck or the body; if mucous, thick and viscous (coming from the neck); or if clear, aqueous, sanguinolent, or muco-sanguineous (coming from the body), which may be due to a catarrh, to simple fluxion, &c.; or if it is muco-purulent or purulent mixed with globules of blood, or yellowish white, very yellow, yellow green, and more or less creamy (which is often a symptom of metritis, especially of internal metritis).

As a rule we must abstain from using the sound: it is useless, and may be dangerous. We run the risk of finding a uterus at the period of inflammatory softening, and by pushing the sound in a direction not exactly that of the axis of the organ may partially perforate the tissue. It is only in doubtful cases of chronic metritis limited to the body or in cases of chronic endometritis that the use of the sound is practicable, and only then with great prudence. It measures the increased length of the uterus, which sometimes reaches $3\frac{1}{4}$ or $3\frac{1}{2}$ inches, and also the increased capacity of the organ, the instrument being easily turned in every direction, owing to the excentric hypertrophy usually observed in metritis, especially in chronic internal

metritis. At the same time it allows of the increased sensibility of the organ being perceived; for its introduction is not made without causing sharp pain especially in passing the os internum. It gives an idea of the facility with which the mucous membrane bleeds; for in this case it is often accompanied by a comparatively abundant hæmorrhage, which is presumptive of the existence of uterine fungosities, especially when the sound encounters difficulties in traversing the internal surface of the organ.

Abscess of the parenchyma of the uterus.—The formation of pus and the presence of an abscess in the uterine tissue may be observed after abortion, delivery or operations performed on the uterus and genital organs, but it is so rare after non-puerperal acute metritis that it has been denied. I do not say that a concomitant catarrh may not be mistaken for it; nevertheless, the following facts seem to me very conclusive. Frederick Bird¹ gives the case of a woman of thirty-seven who succumbed to chronic metritis; the fundus was three times its normal thickness; an abscess developed in the posterior wall opened by a short and narrow passage into the rectum; it did not communicate with the uterine cavity. Scanzoni² relates another case in a young woman, after a sudden suppression of menstruation; violent metritis followed, treated for eight days without obtaining any amelioration; on the contrary, sensibility of the uterine region increased, shivering occurred frequently, and a tumour of the size of an egg, moderately resistant and easily defined, was developed above the horizontal portion of the right pubis. Symptoms of violent peritonitis appeared suddenly on the twenty-second day to which the patient succumbed on the thirty-first day. The autopsy showed the cause of death to be the rupture of an abscess of the size of a goose's egg, situated in the right and upper portion of the uterus, the pus from which had made a way for itself through the external layers of the substance of the uterus and its peritoneal envelope.³

In exceptional circumstances the malady not only assumes a chronic form, but the purulent collection may reach very considerable proportions.⁴ Uterine abscesses may be opened artificially or spontaneously into the uterine cavity, the rectum, the vagina, the abdominal cavity, the bladder, or even through the abdominal parietes, previously united to the uterus by means of adhesions.⁵

¹ *Gaz. méd. de Paris*, 1843, p. 645.

² *Op. cit.*, p. 159.

³ Lados has also published a fact of this kind, *Gaz. médicale de Paris*, 1839, p. 605.

⁴ Hervez de Chégoin, *Société de chirurgie*, Dec. 2, 1868.

⁵ Besides the case just related, in which probably a phlegmon was formed in the pregnant uterus, I have collected some other undoubted cases of *uterine abscess*: one opened into the uterine cavity, another into the vagina in the middle of the posterior cervical lip, another into the utero-vaginal groove of the posterior lip, another into the anterior groove, and three others laterally. Only it was doubtful (especially with regard to the latter) whether these were uterine abscesses; a phlegmon of the broad ligament might be suspected. I have only diagnosed a uterine abscess when the sound reached a centre evidently

Table of the Differential Diagnosis between Inflammation of the Uterus and other diseases of this organ, which might be confounded with it.

PATHOLOGICAL ANATOMY.	FLUXION.	CONGESTION.	INFLAMMATION.	ENGORGEMENT.	ŒDEMA.	HYPERTROPHY.	SUBINVOLUTION.
PATHOLOGICAL ANATOMY.	<i>Rapid afflux of blood into the vessels. More or less sudden repletion of the vascular system under the influence of this movement. This repletion disappears after death. Temporary hyperemia.</i>	<i>Plethora and stasis of blood. Fullness of the vascular system of the uterus, with gradual and continuous distension of the vessels. Persists after death; the organ preserves its redness, its increased size and weight. Hyperemia persistent.</i>	1. <i>Vascular plethora</i>, dark bright red on the surface; injections, <i>arborisations</i>. Peritoneum peels off easily. Tissue softened or indurated according to the period. 2. <i>Processes either plastic and proliferant</i> (hypersecretions, granulations, fungosities, &c), or <i>destructive</i> (suppuration, ulceration, &c.)	<i>Interposition</i> between the normal anatomical elements of the uterus (tissue proper and vascular network) of <i>amorphous organic matter</i>, liquid or semi-liquid, which is not organised, and of fatty molecular granulations.	<i>Infiltration of serosity into the areolar tissue</i> (interstitial dropsy), especially under the mucous membrane. Mixture of distension and softness: the tissue retains the impression of the finger. Section allows the serosity to escape.	<i>Increase in number and size of all the tissues, and especially of the uterus—whether total or partial (mucous membrane or tissue proper, neck or body, anterior or posterior segment). Condensation and often induration.</i>	<i>Increase in number and size of all the tissues, congestion, vascular plethora. Softness and suppleness of the tissue, analogous to that of the uterus during gestation, or three weeks after delivery. Ligaments usually relaxed.</i>
	Commences suddenly: concentration, spasm, irritation, shivering. <i>Pains</i> dull, lumbosacral, sometimes pulsating; dull spasmodic colics; painful desire for micturition and defecation. Heat. Local pains of <i>molimen</i>. Sometimes general pains, sanguineous raptus towards other organs.	Commences slowly, or follows fluxion. Sensation of heat, <i>pelvic fulness</i>, sacral pain, weight at the perineum and loins. Neither molimen nor sanguineous raptus. Chronic irritation of the bladder and rectum not constant. Dyspepsia. Disorders of nutrition and innervation. <i>Facies uterina</i>.	Often commences suddenly with a prolonged rigor. Fever constant in acute metritis, not uncommon in chronic metritis. Acute darting hypogastric pain, different from colics, increased by movement and pressure. Sometimes dysmenorrhœa and leucorrhœa. Symptoms in neighbouring organs. General symptoms more prominent than local in chronic metritis; especially dyspepsia, neuro-anæmia and debility. Radiating pain. Burning heat at the hypogastrium, vagina and vulva. Pulsating pains. <i>Facies uterina</i>.	Commences slowly, and is rarely primary. Sensation of weight and <i>pelvic discomfort</i>; no heat; lumbosacral and inguinal dragging; diminution more frequent than increase of menstruation. Sometimes dysmenorrhœa or leucorrhœa. Symptoms in neighbouring organs; later on, general symptoms.	Is developed rapidly if symptomatic of a phlegmon; slowly, if symptomatic of a chronic malady which hinders the venous circulation. No subjective symptoms proper. The symptoms are effaced by those of the malady which causes it. Sometimes leucorrhœa.	Begins slowly. Pelvic or vulval discomfort (longitudinal hypertrophy of the neck). Negative characters. No phenomena of reaction. Sometimes diminution in the abundance of menstrual flow.	No commencement: the malady always succeeds delivery. Abnormal discomfort in the pelvis, painful feeling in the abdomen, numbness of the lower limbs. After walking, sensation of falling of the womb towards the vulva, dragging on the loins. Menstruation sometimes excessive or too frequent.
SUBJECTIVE SYMPTOMS.	Renitent tumefaction, pain, redness, heat. All these changes are temporary, but all the more noticeable, because coming suddenly. They are fugitive, unobserved at post mortem examination.	Tumefaction more or less renitent, sometimes with descent; some pain and almost no heat, with dark red colour; sometimes localised on a segment of the organ. Increased size of the uterine cavity shown	Tumour, redness very marked, burning heat, extreme sensitiveness, excessive pain from pressure on the hypogastrium or in the vagina. Persistence of all these symptoms. Arterial pulsation perceived in the	Tumefaction general or limited to a section; normal paleness or redness, sometimes slight hyperæmia. Characters negative: no heat, no pain on pressure. Frequently inclining to or prolapsus. Hard-	General or limited tumefaction, especially at the cervix; tissue soft, preserving the impression of the finger. Paleness. Signs of a uterine or peri-uterine malady, unless there is anaesthesia extended to the	Considerable increase of size sometimes only reaching the cervix and shown by the sound. Indolence. No elevation of temperature, often hardness, never softening. Sometimes deformity of the uterus ac-	Tumefaction; increase of the cavity shown by the sound. Orifices gaping. The uterus is sometimes flexed, inverted or prolapsed. Neither pain nor heat (negative characteristics). Suppleness of tissue
OBJECTIVE SYMPTOMS.							

Fluxion is almost always <i>primary</i>; always <i>active</i>; it follows an <i>acute</i> course, is dissipated quickly. It is <i>temporary</i> and <i>mobile</i>, subject to return, even to frequent recurrence, which constitutes chronicity or rather persistence, not of the morbid state, but of the pathological act. It is <i>chronic</i>. May arise spontaneously or from a fluxion which has not been dissipated, or from repeated hypertrophied and inflamed organ; produces aggravations by fits and sometimes provokes a temporary hypersecretion (leucorrhœa) or a discharge of blood (metrorrhagia). It occurs more frequently than the other maladies at puberty and the menopause.	by the mobility of the sound. Often <i>secondary</i>. Rarely <i>active</i>: result of the retention or persistence of a fluxion. Sometimes <i>passive</i> in consequence of atony and defective contractility of the vessels. Sometimes <i>mechanical</i> from an obstacle to venous circulation or return. Essentially <i>chronic</i>. May arise spontaneously or from a fluxion which has not been dissipated, or from repeated hypertrophied and inflamed organ; produces aggravations by fits and sometimes provokes a temporary hypersecretion (leucorrhœa) or a discharge of blood (metrorrhagia). It occurs more frequently than the other maladies at puberty and the menopause.	utero-vaginal sinuses. Mobility of the uterus unless there is perimetritis. Mucous membrane apt to bleed. Appearance sudden after traumatism, suppression of the menses, abortion, or delivery. At other times inflammation is developed slowly, and increases from day to day from want of care. Thus there is <i>acute metritis</i> and <i>chronic metritis</i>. According to the seat, there is <i>endometritis</i>, <i>metritis</i>, <i>parametritis</i>, and <i>perimetritis</i>. It may be total or partial (of the neck or of the body). Always active. Persists indefinitely if not treated. Experiences an exacerbation at every menstrual period. May be observed in all married women, but especially in primipare. It is usually the consequence of the puerperal state.	ness, resistance. Mobility preserved. No other neighbouring malady. No phenomena of reaction. Most frequently <i>secondary</i>; produced by effusion of plasma under the influence of repeated fluxions, chronic congestion, or plastic processes (inflammation), which have not reached proliferation or the formation of neoplasms. Always <i>passive</i>. Essentially <i>chronic</i>. Often kept up by a diathesis. Most frequent in multiparæ.	uterus as to the other organs. Always <i>secondary</i>. Caused by another malady which impedes circulation (perimetritis, peritonitis, uterine tumours, venous obstructions) of the broad ligaments. Often symptomatic of suppuration, of a deep uterine, peri-uterine or peritoneo-pelvic abscess, as œdema of the limbs is symptomatic of sub-apoplectic abscess. Always <i>passive</i>. May be dissipated after the opening of the abscess which has caused it. <i>Acute</i> or <i>chronic</i>, according to whether it is caused by a pylegmon or a chronic malady. Often kept up, like the malady which causes it, by a diathesis. More frequent in multiparæ, but may be met with in nulliparæ.	according to the part hypertrophied. Rarely primary. Usually consecutive. Succeeds congestion or chronic metritis, or even arrested involution, or is developed spontaneously in consequence of the physiological tendencies of the uterine tissue. It may not only be total or partial; but it may be general (affect the whole of the tissues), or be localized on one tissue, on the mucous membrane (fungosities, mucous polyp), on the tissue proper (fibromata, fibrous polyp), &c. Is never cured spontaneously. Rare in nulliparæ.	as during gestation. Increased mobility of the organ owing to laxity of the ligaments. Always consecutive to delivery, or rather to numerous deliveries. A kind of hypertrophy physiological in its origin, pathological in its permanence. It does not always prevent a fresh pregnancy, but it has still less tendency to cure after another delivery. Is hardly ever met with except in multiparæ.
Reversives, derivatives, depletives, according to whether the fluxion is beginning, recent or ancient. Always <i>reversives</i> (cutaneous or intestinal), either temporary (purgatives, footbaths, blisters), or continued (hydropathy, gymnastics, &c.). Sometimes subdue the plethora. Sometimes treat the debility by tonics in order to re-establish the equilibrium in the general circulation.	Before all, make a <i>direct depletion of the organ</i> (leeches to the cervix); purgatives, rest, baths, irrigations. Cutaneous revulsion (blisters on the hypogastrium). Resolvents, alkaline baths, hydropathy, sea-bathing. Tonics, iron.	Essentially <i>antiphlogistic</i>. Bloodletting, especially local. Absolute rest, emollients, diuents. Tepid, continuous, prolonged irrigations; baths; very hot injections. Intestinal or cutaneous reversives. Sedatives. Resolvents, mercurial ointment. Alkaline baths. Hydropathy as a preventive means with regard to relapses rather than curative.	Turn aside the fluxionary movements. Dissipate congestions. (Cutaneous and intestinal reversives, hydropathy, no bloodletting). Stimulate absorption of engorgement in the organ and in the economy. (Cauterisation of the cervix. Solvents internally, on the skin, on the cervix, in the rectum. Alkaline baths, Vichy, &c.). Treat the diatheses which keep up the engorgement.	is the cause. Afterwards apply the treatment for engorgement, or the general treatment of dropsy and œdema. Blisters on the vaginal portion of the neck, &c.	<i>Resolvent</i> medication. Solvents. Alternatives (iodine, mercury, alkalines, vapour baths, hydropathy, <i>cura famis</i>). Cutaneous and intestinal reversives.	Tonics, resolvents, reversives. Especially sea-bathing, hydropathy, douches on the loins, groins and sides. Above all, excite <i>uterine contractions</i> by ergot, electricity, or the galvanic stem pessary.

COURSE.

TREATMENT

When a uterine abscess is formed, there may be much difficulty in determining the nature of the tumour due to this cause. In addition to the presence of the tumour, there is intense fever, with irregularities, sometimes shivering, perspiration and all the other symptoms denoting the formation of pus. Scanzoni thinks that diagnosis is only possible when, after having observed the symptoms of acute metritis, the presence of a tumour of rapidly increasing size at first hard and then fluctuating is discovered through the superior vaginal wall or the anterior abdominal wall. But even in such cases we must admit that diagnosis may remain doubtful till the pus has spontaneously made a passage for itself or till its presence has been proved by an exploratory puncture, which should only be made with great precaution.

Abscesses of the uterus, formed by a purulent collection within the uterine wall or between the uterus and its peritoneal covering are closely connected, by their symptoms and general course, with pelvic abscesses. The only difference is that in cases of the former kind, the tumour appears to be a tumefaction of the uterus itself, more limited and more circumscribed than in those of the second series.

The prognosis, always doubtful, may be very serious. The treatment is that of acute metritis. If the abscess is accessible to the bistoury an exploratory puncture may be made, and when it is found to contain pus it may be opened.

Differential diagnosis.—The differential diagnosis of metritis, especially of acute metritis, is usually easy; but it is not always so. The accompanying table sums up the differential diagnosis between metritis and the other uterine maladies which may be confounded with it.

The other uterine disorders which must be distinguished from metritis are: hysteralgia, hematometria, hydrometria, pregnancy, flexions, uterine catarrh, ulcerations, fibromata, polypi, cancer. The elements of differential diagnosis will be given in the description of each.

2. *Maladies of the appendages and peri-uterine maladies—inflammations and tumours of the Fallopian tubes and ovaries.*—There is no tumefaction and no uterine pain unless the inflammation extends to the womb; but there is a tumour behind the organ or on one side of it, which is usually accessible to the finger in the utero-vaginal sinus. The seat of this tumour, which is usually limited to one side, is especially observed when vaginal touch is associated with palpation.

Peri-uterine inflammation.—The uterine tissue is not painful to pressure; but we cause acute pain if we try to move the womb, or press on the tumour formed behind or around it; the uterus itself is immovable. This immobility is a sign of great importance, and contrasts with the mobility which the uterus preserves in metritis.

Hæmatocele is developed rapidly as a rule, and is accompanied with suppression of the menses. There are general symptoms of hæmor-

contained in a segment of the organ, or when an injection could not apparently reach the peripheric portions. In this way it is possible to diagnose with precision.

rhage and peritonitis. *Tumour behind* or on one side of the womb, raising the vagina. Uterus displaced, usually upwards behind the pubis, and *immovably fixed*.

Peritonitis.—Acute abdominal pain on the slightest contact. Bilious green vomiting, hiccough, abdominal distension. Face drawn and anxious, eyes sunk, pulse frequent, small, *abdominal in character*, extremities cold, &c. *Neuralgia*, whether lumbo-abdominal or ileo-sacral, is rarely accompanied by fever, is situated almost always *on one side*, and presents well marked and characteristic *painful spots*.

Treatment of metritis ought to be energetic: essentially antiphlogistic in acute metritis, equally antiphlogistic in the commencement of chronic metritis, the complications being treated at a later period; the principal aim being to regulate the uterine functions and restore the constitution.

Treatment of acute and subacute metritis.—It consists in blood-letting, the use of emollients, revulsives and sedatives.

I. *General bloodletting* may be resorted to, but I think it has been abused. Blood should only be drawn from the arm in cases of acute metritis unless the patient be very plethoric or the case otherwise exceptional. Bloodletting should be essentially revulsive, and consequently performed according to the rules of revulsion, *i.e.* at the commencement, if the fluxion is strong or imminent, or immediately before the monthly period, or after local sanguineous evacuations have prepared the mobilisation and revulsion of fluxion considered as an element of the inflammation itself. In no case should the bloodletting be spoliative, especially in chronic metritis. We must remember that the majority of such patients would be the better for more blood, and that when any is abstracted it is to put a stop to the fulness of the organ, or give another direction to the blood, but never with the object of diminishing its quantity. We must on the contrary hasten to repair the loss by means of tonics and iron, if we would ensure any good results from bleeding.

The application of *leeches* or *cupping glasses* to the *hypogastrium* or *inner surface of the thighs* is indicated when there is not only metritis, but inflammation of the neighbouring parts of the peritoneum. We sometimes require to have recourse to them when the narrowness and sensitiveness of the vagina make the introduction of the speculum impossible, as is usually although not always the case in virgins. In puerperal metritis, when the uterus has just been depleted by the loss of blood following delivery, leeches applied to the abdomen produce a salutary derivation. From fifteen to twenty-five should be applied several times. If after two or three days pain still continues another application should be prescribed, unless the state of the pulse absolutely forbids it, for in some cases it causes the pain and tumefaction of the uterus to disappear as if by enchantment. In this way puerperal metritis may in a few days yield to energetic and well-directed treatment.

The application of leeches to the cervix is preferable to general bleeding in simple metritis, whether acute or chronic; it alleviates the

pain at once and weakens less. In chronic metritis it may be advisable to repeat the application several months successively till pain on pressure has ceased or diminished considerably. These sanguineous emissions are essentially depletive; they have a decisive action on pains experienced by patients, and the immediate effect is prodigious; but the quantity of blood drawn should be considerable, and this effect should be aided by that of intestinal and cutaneous derivatives and revulsives. Virchow¹ rightly says: "As a rule local bloodletting should not be considered as a direct and sufficient antiphlogistic means, but rather as a preparatory one. Its action is only transitory; but when used opportunely it prepares for the action of other remedies." Lastly, *scarifications on the vaginal portion of the neck* also cause direct sanguineous evacuation. We are obliged to have recourse to them in patients who are anæmic or disposed by a kind of hæmorrhagiparous diathesis to profuse hæmorrhages, or when inflammatory congestion does not go beyond the cervix, or when the lips of the inflamed neck are covered with erosions, ulcerations or papillary or follicular granulations. Virchow makes the just remark that scarifications do not act exactly like leeches. By means of scarifications we penetrate into the interior of the inflammatory centre and cut the vessels directly. In this way we obtain not only direct depletion of the internal tissues and the evacuation of exudations which are in process of formation, but we apply the most energetic irritation (traumatic) to the walls of the vessels, and thus provoke their contraction as well as arrest the circulation for a long time.

II. Before resorting to revulsives which follow the application of leeches we should have recourse to *emollients* employed even before and simultaneously with bleeding. In acute metritis a severe diet must be prescribed, absolute confinement to bed, the dorsal decubitus with the head flexed on the trunk, the legs on the thighs and the thighs on the pelvis, prolonged tepid baths, general at first, and then sitz-baths, emollient and narcotic cataplasms, fomentations with a decoction of poppy-heads and belladonna, enemata, emollient at first afterwards laxative, injections of liquid cataplasms, to remain some time in the vagina (Valleix), baths or fomentations of the cervix (Méliér), emollient injections (tepid milk, mixture of oil and water, decoction of mauve, &c.), narcotic, and when necessary detersive injections and better still, continuous hot irrigations, either in the bath or in bed by means of the double vaginal irrigator, or on the bidet with the hydro-clyse. All these means tend to favour the action of bloodletting.

It is essential that the baths, irrigations and injections should be hot (35° to 40° C.; 95° to 105° F.) at the commencement of inflammation. They act by temperature, imbibition, moistening of the tissues, and by their emollient or sedative principles, and by the cleanliness which they keep up in the vagina and on the cervix, by washing away the acrid secretions, the irritating mucous discharges from the uterus. The continuous irrigations are especially useful, which the patient may suspend and resume from time to time during the day.

¹ *Handbuch der spec. Path. u. Therapie*. Erlangen, 1854, Bd. i, S. 84.

Emmet recommends *hot injections* in place of tepid or cold ones, as an excellent means of restoring tone (by reflex action) to the veins that have lost it, and of dissipating the venous congestion, which is, in his opinion, the essential element of this so-called inflammation.

In cases of puerperal metritis, when the abundant leucorrhœa becomes sanious, and gangrenous residues are added to the pus, the injections should be made disinfectant, deterative and antiseptic, by adding quinine, chloride of lime, coal tar, carbolic acid, or permanganate of iron.

In proportion as the acute character and the accidents thereby provoked diminish or disappear and the metritis passes into the chronic state or shows a tendency to resolution, the temperature of the injections should be lowered considerably. Irrigations with tepid and even cold water in sitz-baths are at that time useful. They should be repeated twice a day for half an hour or an hour each time.

III. Among *revulsives* repeated purgatives hold undoubtedly the first place. When the inflammation is violent and is propagated to the peritoneum, or when it is manifested during the puerperal state, mild laxatives are preferable. Castor oil besides acting as such keeps up a slight revulsion on the digestive canal without exposing it to inflammation. Calomel is recommended with the same object. Like Aran I prescribe calomel in doses of from $1\frac{1}{2}$ to 3 grains, repeated every twenty-four hours, but without allowing it to affect the gums or produce mercurial action in the mouth, which can always be prevented by using a saturated solution of chlorate of potash as a gargle and washing out the mouth after meals. Mercurial frictions may be used simultaneously with calomel or alone. They form one of the best means of subduing acute or chronic metritis. Even in puerperal metritis the frequent and abundant application of mercurial ointment, pure or with the addition of a twentieth part of extract of belladonna, has an undoubted effect. In the acute stage we must not fear to use $\mathfrak{3j}$ or more in the day, and to keep it on for some days, unless a miliary eruption be produced by the mercury. Purgatives, in addition to chlorate of potash used as a gargle as well as internally, prevent salivation. After every mercurial application a large hot linseed poultice made with the decoction of poppy-heads is placed on the abdomen, if the patient can bear it. In chronic metritis I continue the mercurial frictions for a long time, but in small doses, not as antiphlogistics but as resolvents. Every evening the patient should apply the ointment to the abdomen, groins, and to the upper portion of the inside of the thighs; over this she lays a piece of linen covered with cotton wool and, when moisture of the skin is desired, oil silk or waterproof above, the whole being easily kept in place by a small pair of knitted swimming drawers, which also prevents the patient's linen from being soiled. The resolvent effect of this treatment is wonderful. To return to purgatives, I ought to add that in a great number of cases laxatives are not sufficient. In simple acute metritis, after applying leeches to the cervix, a purgative is indicated. Care must be taken to repeat the leeches till the sanguineous evacuation has been sufficient; but when-

ever the depletive effect is produced and pain alleviated recourse must be had to a purgative the following day. If the patient can bear a strong purgation it need not be feared, and may be repeated. Epsom or Glauber's salts, seidlitz water, rhubarb and senna, castor oil with the addition of one or two drops of croton oil, produce a strong revulsion on the digestive canal very favorable to the resolution of the inflammation. This should be repeated after every application of leeches, especially in chronic metritis. I may also mention ipecacuanha, strongly recommended by Trousseau in subacute metritis depending on the puerperal condition; according to Pajot also it is an admirable medicament.

The cutaneous revulsives most frequently employed are blisters. They may be applied to the inner surface of the thighs or to the calves after bleeding, purgatives and mercurial frictions. Usually they are applied to the hypogastrium and, when repeated, produce excellent effects; but they act more efficiently against the complications of metritis, peri-uterine inflammation, ovaritis, &c., than against metritis itself. They are equally useful in acute and chronic metritis. Later on, painting with croton oil, antimonial ointment or tincture of iodine may be substituted.

IV. A last indication of antiphlogistic treatment properly so called is to *soothe pain*. If it has not yielded to leeching, and if the nervous element predominates after bleeding, sedatives and narcotics should be resorted to. Small enemata with 10 or 20 drops of laudanum, opium suppositories, blisters sprinkled with morphia, frictions with various sedative liniments, and lastly opium or morphia in hypodermic injections, may be administered according to the case. Even in puerperal metritis about $\frac{3}{4}$ of a grain of opium may be given in a day. When patients suffer much the dose may be increased and continued till pain ceases; $\frac{3}{4}$ of a grain of Ext. Opii can easily be taken every six hours; by repeating the dose more frequently I have been able to give $7\frac{1}{2}$ grains in a day. Preparations of opium have the advantage of not only alleviating pain but of diminishing intestinal contractions which are the cause of pain. When opium does not agree, the hydrochlorate of morphia may be tried: $\frac{3}{4}$ of a grain may be dissolved in $1\frac{1}{2}$ ounce of water, and a teaspoonful given every hour till a sedative effect is produced, or a few drops of a stronger solution may be given subcutaneously.

I do not speak of anæsthetics, as the effects are too transitory to be of much use except in those cases where the patient cannot tolerate opiates.

As for superficial transcurrent cauterisation, which has been recommended to alleviate pain after inflammation has disappeared, it seems to me that it may always be advantageously replaced by one of the means just mentioned, especially by subcutaneous injections of morphia and atropine.

The introduction of fragments of ice into the vagina have also been suggested; this, however, I think less indicated in metritis than in metrorrhagia, as it might be accompanied by a dangerous reaction.

For vulval pruritus, starch and subnitrate of bismuth should be used or white precipitate of mercury (one in ten), oxide of zinc, borax, alkaline lotions or Gowland's solution (chlorohydrate of ammonia and bichloride of mercury $\bar{a}\bar{a}$ gr. $\frac{3}{4}$, emulsion of bitter almonds $\bar{z}$ vij. M.).

Lastly, we must favour the effects which we are entitled to expect from this treatment by hygienic measures. Occasions of catching cold should be avoided, especially by patients suffering from endometritis, as this is very apt to be succeeded by leucorrhœa or real uterine catarrh; they should wear flannel and use every means to restore the constitution.

Treatment of chronic metritis and its complications.—The treatment is the same as that just described, only in cases of chronic parenchymatous metritis and especially in metritis of the cervix, it is usually advisable to commence with ignipuncture of the cervix, a kind of scarification the derivative effect of which may be advantageously followed up by the administration of alteratives, alkaline baths and hydropathy.—This, however, is insufficient without treating the leucorrhœa, metrorrhagia, fluxion, congestion, engorgement and hypertrophy which may persist after the cessation of pain and the inflammatory symptoms properly so called, without speaking of ovaritis, peri-uterine inflammation, and other complications which yield less easily than metritis itself.

Metrorrhagia when acute usually yields to bleeding, rest, emollients, tepid baths, in short to antiphlogistic treatment. When chronic, whether permanent or recurring frequently, or at intervals of three or four months with numerous acute phenomena, of which I have seen cases, it ought to be treated at first by tepid injections on the bidet or in a general bath, and even by very hot injections, as advised by Emmet, or by hot applications to the loins, hypogastrium, &c., according to Chapman's method (*see* p. 341). But in the chronic form of metritis or when all inflammation appears to have been dissipated, and when hæmorrhage is the only persisting result of it, it should, on the contrary, be treated by refrigeration (cold applications, compresses, bladders of ice, sulphuric ether, &c., to the abdomen; injections and enemata of cold water, injections on the bidet with ice-cold water, vinegar, alum, &c., continuous introduction of pieces of ice into the vagina, or cold sitz-baths of running water, at first for a minute, but gradually prolonged to a quarter of an hour); by astringents (tincture of cinnamon as used by Récamier, tannin, rhatany, alum, ergotine, ergot by preference when the tissue is soft, perchloride of iron internally as well as in injections); by cardiac sedatives (digitaline, or the infusion of the leaves, either in large doses as recommended by Howship, Dickinson and Trousseau, or in small doses as given by Gallard, $3\frac{1}{2}$ to 7 gr. of leaves infused in $\bar{z}$ iv of water and taken in the day, which seems to me sufficient; I may add bromide of potassium, of which from 30 to 90 gr. may be given daily); by the scraping off of uterine fungosities with Récamier's curette; lastly, by direct cauterisation of the uterine mucous membrane (*see* chapter on Hæmorrhage).

Leucorrhœa, ulcerations, granulations, fungosities and other alterations of the mucous membrane necessitate the application of the same topics indicated apropos of each of these maladies.

Chronic congestion, engorgement, hypertrophy of the uterine tissue particularly require alteratives, more or less energetic resolvents, direct and indirect, external and internal, employed in various ways during a long time, or frequently resumed, leaving the patient intervals of rest.

Energetic resolvents, alteratives properly so called, iodine and its preparations, repeated purgatives, tonics (iron and bark), mineral waters (sulphur, iron, or alkaline according to the diathesis of the patient, alkaline especially as resolvent of engorgements, such as Vichy, Royat, Nérès, Carlsbad, Ems) ; lastly and above all if there is no contra-indication, hydropathy, all help in fulfilling every indication in the treatment of chronic metritis. Hydropathy may be associated with the use of an internal medicament or some mineral water. For instance, I often prescribe sulphur water internally in cases of chronic metritis and leucorrhœa kept up by a catarrhal or rheumatic condition simultaneously with the cold douche, in order to determine a good reaction. When parenchymatous metritis is followed by a state of engorgement or hypertrophy, alkaline waters, Vichy especially, are preferable.

As local means, in cases of leucorrhœic endometritis especially, intra-uterine injections, astringent or caustic applications to the uterus, injections of tannin, nitrate of silver in powder, iodoform, or the actual cautery may be of use exceptionally. I shall indicate the manner in which these different means should be employed, in describing the special treatment of endometritis.

Lastly, if it is important to superintend the *convalescence* of acute metritis in order to avoid relapses or the transition from the acute to the chronic stage, it is of equal consequence to watch over the cure of chronic metritis, especially at the monthly period, to avoid the consequences of an abnormal fluxionary movement and the persistent congestion of the organ, if not the recurrence of metritis. Although we do not admit the *incurability* of chronic metritis, like Scanzoni, we acknowledge that after some amelioration of the local disease and general state the slightest cause suffices to produce a relapse. We must also use every effort to remove all traces of leucorrhœa, congestion or engorgement, consequences of metritis which tend to be perpetuated and to bring back the metritis itself, by continuing for a long time the cold irrigations, the resolvent frictions, the purgatives, and especially hydropathy ; taking two courses of mineral waters when indicated ; above all keeping up the strength by tonics, restoring the constitution by iron and by a generous diet, and remembering that, like the fluxion and congestion which are their constitutive elements, chronic phlegmasias are perpetuated and have a continual tendency to be reproduced in the affected organs in delicate patients. The only means of facilitating their displacement, of hastening their disappearance and preventing their return is to give sufficient strength to the patient to maintain this state of equilibrium.

Treatment of the various kinds of Metritis. 1. *Puerperal metritis.*—This is often fatal by its natural consequences and by its complications. However rapid its evolution may be, in this kind as in others, the inflammation may have its seat more especially in one or other of the histological zones, mucous membrane, muscular or cellular tissue, and merit the names of endometritis, idiommetritis, exometritis, given by Hervieux. Endometritis is characterised in the first stage by hyperæmia, redness, thickening of the mucous membrane especially on a level with the placenta, by the viscous, reddish thick coating which covers this membrane, by the projection of its utricular glands, softening, epithelial denudation, exulcerations, sometimes by clots and even fibrinous concretions closing a gaping vascular os. In the second stage which is very common being the termination by suppuration, the uterine cavity is lined by a fluid sometimes reddish brown, sometimes yellow and purulent, of thick consistency especially on a level with the placental disc, of a strong smell, infiltrated into the very tissue of the softened mucous membrane, and even into the vessels which are more or less occluded by sanguineous clots or puriform concretions. A very serious complication of suppurative endometritis is diphtheria and the most serious termination is mortification, either from putrid softening or necrobiosis, or from gangrene properly so called.

Idiommetritis, by the admission of Hervieux, is rarely met with unaccompanied by endometritis. When the inflammation, passing the limits of the mucous membrane, has invaded the muscular tissue of the uterus, the latter organ remains large, tumefied, red and soft. If the inflammation pursues its course it may terminate by suppuration and even by gangrene. Usually, it is in the sinuses and in the veins that pus is found, but the muscular tissue itself may be invaded by suppuration which comes from the veins or from the mucous membrane. The pus, infiltrated at first between the bundles of muscular fibres, at last collects and forms real abscesses.

Puerperal exometritis seems to me more frequently connected with a phlegmon of the broad ligaments, of which it is frequently the starting point, than with other anatomical forms of puerperal metritis; nevertheless, it cannot be denied that inflammation is in certain cases more or less limited to the cellular tissue forming the immediate envelope of the uterus or of the veins, or oftener still the lymphatic network contained in it. Hervieux says: "The possible complications of puerperal metritis are so numerous, that in order to indicate them all the cadaveric alterations to which puerperal poisoning may give rise must be enumerated. Phlebitis, and especially uterine phlebitis, general or partial peritonitis, phlegmon of the broad ligament, salpingitis, ovaritis are its usual concomitants; then pulmonary congestion should be mentioned, the visceral purulent diathesis, the peripheric purulent diathesis, fatty degeneration of the liver, hyperplastic tumefaction of the spleen, parenchymatous inflammation of the kidneys, all lesions denoting a state of general intoxication of the

organism" (*Traité clinique et pratique des maladies puerpérales*, p. 259).

According to the intensity, acuteness and degree of complication of the malady, puerperal metritis may run through all its phases in two or three days ending fatally very quickly; or its duration may be prolonged to the point of producing suppuration and allowing the effects of art and nature to triumph in some cases over the complications. (diphtheria, gangrene, lymphangitis, phlebitis, peritonitis), however redoubtable they be; or lastly, it may remain in a state of relative simplicity which allows of the hope of resolution in ten days, except in cases where the cellular peri-uterine tissue or one of the broad ligaments participates in the inflammation and recovery is necessarily slower. The best preventive means are: proper care at delivery; avoiding contusions, lacerations of the neck, tractions on the cord; taking care to leave no fragments of the placenta in the uterus; arresting hæmorrhage by the administration of ergot continued long enough to favour the contraction of the uterus as much as possible. Treatment consists at first in the application of leeches or cupping glasses, repeated when necessary, at the seat of pain, followed by the administration of ipecacuanha in a dose sufficient to produce vomiting, of emollient and sedative cataplasms covered by oil silk, and large blisters, as well as leeches or cupping glasses applied to the hypogastrium; a thick layer of mercurial and belladonna ointment (Ung. Hydrarg. ʒ iij, Ext. Bellad. gr. lxxv to cl) may also be applied to the abdomen, covered with oil silk and left for several days (taking care to avoid salivation by frequently gargling with a solution of chlorate of potash, and by great attention to the cleanliness of the mouth, for notwithstanding the contrary opinion of many physicians of high standing, among others of Hervieux, op. cit., p. 270, I cannot believe in any good effect being produced by mercurial salivation). Mild purgatives should also be given, not only to prevent constipation but also to produce a revulsive and eliminating action; which need not prevent the strength being kept up in the interval by a diet appropriate to the state of the patient, wine and brandy being given in small doses frequently repeated; bark and quinine may also be resorted to when the phenomena of suppuration and purulent infection seem to indicate it. Digitalis and aconite may also be used to moderate the fever. But above all excessive cleanliness must be kept up in the vagina and uterine cavity, and the surface of the latter should be modified by vaginal and intra-uterine detersive injections, too often even now neglected by practitioners. Anxious as I am to warn my young *confrères* of the dangers of these injections into a uterus in a state of vacuity with a narrow os (*see* Leucorrhœa), I am equally desirous of persuading them to have recourse to them as one of the most valuable means at our command in cases of puerperal metritis. I may take this opportunity of adding the results of my experience to those of Hervieux, of Fontaine his Resident (*Études sur les injections utérines après l'accouchement*, thèses de Paris, 1869), and of others in contributing to introduce into practice a means which,

although presenting some danger, is often the most powerful and perhaps the only one which we possess to prevent the terrible consequences of puerperal metritis, whether suppurative, diphtheritic or gangrenous. Therefore whenever a purulent ichorous fluid more or less foetid is discharged from the uterus we must not hesitate to have recourse to intra-uterine injections simultaneously with the other means of treatment already enumerated. An ordinary gutta-percha male catheter of medium size is sufficient, for the cervix is widely open at this time and the fluid injected into the uterus comes back again too easily to admit any danger of its flowing towards the Fallopian tubes. The patient lies on her back on the edge of the bed, or better still on the side (the English position); the index finger of one hand is placed on the cervix whilst the extremity of the catheter is placed against this finger with the other hand, and is easily insinuated into the uterus; the canula of a syringe, irrigator or hydroclyse is fitted into the catheter; and after making sure that no air has been admitted, we gently and slowly inject from half a pint to two pints of a tepid detersive fluid, which is received into a basin as it returns from the vulva. As soon as the water when expelled is free from all pathological elements, we can cease the injection. One or two intra-uterine injections may be made daily in addition to the vaginal lotions and injections which ought to be much more frequently repeated. The best are: chlorinated water (Sod. Hypochlorit. gr. xv, Infus. Chamom. ʒj), aromatic infusions, or water to which has been added a little coal tar or a few drops of carbolic acid, permanganate of potassium, tincture of iodine, salicylate of soda, &c.

II. *Post-puerperal metritis*.—It usually affects the whole of the uterus. It is generally due to the imprudence of the patient, to her having risen too soon, or to her having resumed marital intercourse too early after delivery, or to a return of uterine fluxion, a tardy hæmorrhage, &c. Unless it be developed subsequent to a late phlebitis of the uterine tissue owing to the formation of a clot in a sinus, it never has the gravity of puerperal metritis, for it neither has its acute character nor its suppurative nor gangrenous terminations, nor its numerous and terrible complications. But it often becomes the starting-point of a chronic metritis all the more lasting from the organ affected being much larger than in a state of vacuity and in a condition of congestion and nutritive activity unfavorable to the resolution of the phlegmasia. Thus it often commences by assuming the subacute form, it is perpetuated indefinitely in the chronic form, and even when it is extinct it may be the starting point of an almost irremediable alteration, the persistence of an abnormality in the size and structure of the organ. It is then troublesome from this double point of view: that it is frequently the starting-point of chronic metritis, and that it often becomes, even when dissipated by suitable treatment, a cause of arrest of the retrograde evolution of the uterus. On these accounts post-puerperal metritis requires prompt and energetic treatment. Leeches may be indicated; hot cataplasms night and day; daily tepid baths, emollients and later on

alkaline baths with injections, mercurial and belladonna ointment on the belly, blisters, repeated purgatives, later on resolvents, ergot, and lastly, general revulsive frictions, tonics, electricity, and hydro-pathy during convalescence constitute the most efficient means of treatment.

III. *Partial metritis of the body of the uterus*.—It frequently follows post-puerperal metritis or neglected abortion, but is more frequently a consequence of dysmenorrhœa, either in virgins or in newly-married women, owing to increased menstruation excited by coitus. It may be acute, but generally it follows a chronic course. The subjective symptoms are: pain, invariably hypogastric, frequently left iliac, sometimes right iliac, very rarely lumbar; discomfort and weight in the pelvis; pain referred to the sacro-iliac articulations, the groins and thighs; most frequently dyspepsia, nausea, chloro-anæmia, with general symptoms analogous to those of pregnancy and dependent on reflex action provoked by abnormal vital activity of the body of the uterus. The malady is easily diagnosed by associating touch with palpation.

Treatment.—Leeches or cupping glasses to the hypogastrium, groins or vulva, repeated when necessary and followed the next day by a purgative; general baths, prolonged horizontal decubitus; the continuous application of mercurial and belladonna ointment; daily laxatives; later on alkaline waters, resolvents, alteratives and tonics, according to the constitution and temperament of the patient or the diathesis which may help to keep up the disease; afterwards ergot, general cutaneous frictions and hydropathy.

IV. *Partial metritis of the cervix*.—It frequently follows lacerations of the cervix during delivery, various traumatismes to which this organ is subject, excessive coitus, &c. The subjective symptoms are: constant lumbar pain, left or right iliac and hypogastric pain rarely; pelvic discomfort communicated to the anus, rectum and bladder, sometimes even to the stomach and nervous system, but more rarely than in metritis of the body. Occasionally enormous tumefaction of the cervix with heat and pain; frequently alteration in its form with sometimes softening of its tissue, sometimes induration, according to the period of the inflammation; often cervical leucorrhœa, ulcerations, granulations, fungosities, epithelial or mucous polypi, the last consequences of this inflammation.

Treatment.—Scarifications more or less deep and numerous, or leeches to the cervix followed by purgatives, prolonged emollient baths with vaginal injections and even continued tepid irrigations in bed, or injections for a quarter of an hour and repeated every hour, with decoctions or emollient, sedative, narcotic solutions (marshmallow, starch, henbane, belladonna, poppies, hemlock, bromide of potassium); laxatives; afterwards, resolvent applications to the cervix with tampons saturated in glycerine or covered with mercurial and belladonna ointment, iodide of lead or red oxide of mercury; application to the cervix of calomel, tincture of iodine, iodoform; alkaline baths with injections; later on, astringent injections and even the actual

cautery simultaneously with alkaline waters, iodide of iron, effervescing iron waters, bark, cold injections, hydropathy.

V. *Endometritis*.—It is sometimes acute, sometimes chronic; even under this latter form it may not go much beyond the elements of the mucous membrane or submucous tissue, not reaching the muscular tissue, or at least not reaching it sufficiently to give rise to other indications than those which naturally proceed from inflammation of the mucous membrane, leucorrhœa, ulcerations, granulations, fungosities, &c.—Metrorrhagia is frequently a symptom, but not so pathognomonic as Gallard says, for it may occur after simple fluxion, or a congestive state of the mucous membrane, as well as after an acute inflammatory condition of this membrane; it depends also sometimes on a softening which has nothing inflammatory and often on bleeding fungosities developed in the body, analogous to those observed so frequently on the cervix causing a flow of blood on the least fluxionary movement. Owing to the existence of these fungosities and to the accompanying hypertrophy or simple swelling of all the mucous membrane, this fluxionary movement is followed by a persistent congestion and by a hæmorrhage sometimes very persistent and very abundant, recurring every month and even oftener, and lasting sometimes uninterruptedly from one period to another, weakening patients greatly; but these fungosities themselves are not necessary consequences of inflammation; like polypi they may be developed independently of it, and strictly speaking without the intervention of endometritis; admitting that endometritis is their starting-point, they are only developed as an effect of the modifications which inflammation has produced on the mucous membrane, in consequence of its softening and hypertrophy, and therefore they are much more characteristic of the chronic than of the acute form of endometritis, and consequently the hæmorrhages to which they give rise are symptoms of chronic as well as of acute endometritis; lastly, I repeat that metrorrhagia in itself has no pathognomonic signification, for it may be the consequence of non-inflammatory fungosities, or of the fluxion, congestion and softening just referred to, or it may be produced simply by the existence of an interstitial fibroma or intra-uterine polypus or cancer, not to speak of the general alterations of blood which may cause hæmorrhage from the uterus as from other organs.—Leucorrhœa is a more characteristic symptom of endometritis than metrorrhagia; it coincides with the latter or alternates with it, or it is manifested alone; it may be simply mucous or more or less purulent, limited to the uterus and even to one of its segments (body or neck), or be extended to the vagina, sometimes accompanied by erosions and various eruptions on the uterus, vagina and vulva, by vulval pruritus and even by cutaneous eruptions.—There are also heat, enlargement of the os internum (unless polypoid fungosities or swelling of the mucous membrane obstruct it in part), marked pain, sometimes very acute, elicited by the sound, and a tendency to bleeding after this little operation.

Treatment.—Leeches to the cervix, superficial scarifications of the vaginal portion or of the intra-cervical mucous membrane, purgatives,

cutaneous revulsives to the abdomen (blisters, iodine, &c.), perchloride of iron, digitalis, later on ergot (especially if the organ is soft) to subdue the hæmorrhage, as well as refrigerants, ice and (in the chronic period) even scraping with Récamier's curette, cauterisation with nitrate of silver, and intra-uterine injections with tincture of iodine, solution of nitrate of silver, &c.¹ (A. Guichard, *Recherches sur les injections intra-utérines en dehors de l'état puerpéral*. Thèse de Paris, 1870. Dupierris, *De l'efficacité des injections iodées de la cavité de l'utérus*. Paris, 1870). I have described how these injections should be made in the puerperal state, and shall here merely refer to the precautions to be taken in making them when the uterus is in a state of vacuity. *Above all the orifices should be sufficiently large or dilated* so that the fluid can easily return however small be the quantity injected, and the contractions produced by its presence in the womb can easily expel it. *In addition, the acute inflammatory symptoms should have been previously subdued*. We may then use a metallic or gutta-percha catheter (the latter is often insufficient on account of its softness) of calibre equal to the ordinary sound, and by means of a small syringe a quantity of fluid in proportion to the capacity of the uterine cavity may be injected very gently; usually a few drops is sufficient to reach the whole mucous membrane. I am accustomed to administer previously a small sedative enema with fifteen drops of laudanum, in order to diminish the pain of the uterine colics which the presence of fluid in the cavity of the womb does not fail to produce, and shortly afterwards I prescribe a prolonged emollient bath with vaginal injection, emollient cataplasms on the abdomen, and rest in bed. Later on, we may prescribe daily astringent vaginal injections. In this chronic period of the malady we must also consider the general phenomena and diathetic conditions which follow, complicate or keep up the endometritis: dyspepsia, chloro-anæmia and herpetism must especially be treated. With this object we have recourse to pepsine, alkaline drinks, laxatives, iron preparations associated with tonics (rhubarb, bark, quassia), sedatives (one or two drops of laudanum or of a solution of gr. $1\frac{1}{2}$ of morphia in ℥℥ss of cherry laurel water (Gallard) or gr. $\frac{1}{4}$ of powdered belladonna root before food), stimulants (bark, wine, absinthe, cinnamon, pepper, coffee, before or after meals), arsenical preparations, balsams, (tar-water, tolu, &c.), sulphur waters and hydropathy.

VI. *Parenchymatous metritis*.—It may also be acute or chronic, but of all the forms it is the one which persists the longest, and which is met with most frequently in the chronic state. There are, according to the period or the individual tendencies, softening or induration of the tissue simultaneously with increased size of the organ, amenorrhœa, or diminution of menstruation, especially at the period of indu-

¹ Athill (*The Dublin Journal of Medical Science*, Jan., 1873) cauterises the mucous membrane with nitric acid by means of the intra-uterine speculum in cases where other means have failed. According to Blanchard (*De la cautérisation de la cavité ulérine dans la métrite chronique*. Thèses de Paris, 1873) Laroeyenne of Lyons obtains good results from this cauterisation, which proves the innocuity of nitrate of silver in these cases.

ration, sometimes also dysmenorrhœa. The uterine cavity is sensibly increased, and the orifices, especially the internal, are almost always enlarged by excentric dilatation of the walls. Hypogastric, lumbar, inguinal and pelvic pain are present with a feeling of fulness and weight increasing often considerably at the monthly period and persisting afterwards. To these are added dyspepsia, chloro-anæmia, debility and frequently emaciation and serious alteration of the health, especially when the disease is of long standing.

Treatment.—Leeches and deep and repeated scarifications of the cervix followed by prolonged alkaline and emollient baths with injections; and purgatives replaced afterwards by daily laxatives, emollient cataplasms, mercurial ointment applied to the abdomen and injected *per rectum*. Later on, cauterisation of the cervix, several punctures of from 5 to 10 millimetres being made with a fine point at red heat so that a resolvent and derivative action may be exercised at several points. Simultaneously and afterwards, tonics, solvents, mineral waters and hydropathy.

The manner in which I associate these various methods is the following: I apply leeches to the cervix or practise scarification, once or twice after menstruation if pain is increased at that time, administering an emollient bath the next day and a purgative the day following; I prescribe three alkaline baths (Sod. Bicarb. ℥viij and 2 lbs. of bran) a week, with vaginal injection during the bath and rest in bed for an hour afterwards; every morning friction of the whole body with flannel saturated with a solution of ammoniated camphor or the tincture of some aromatic tonic (bark, benzoin, &c.); ten minutes before each meal to take from a quarter to a whole glass of Vichy, Andabre, Boulou, or Vals mineral water or an artificial alkaline water (75 grains of bicarbonate of soda to the quart), at the commencement of every meal some iron preparation (iodide of iron), and during the meal an effervescing iron mineral water (Bussang, Orezza, Lamalou, Vals, &c.); and a tablespoonful morning and evening of the following prescription: $\text{℞ Pot. Iod. } \text{ʒj}$, $\text{Aquæ } \text{℥viij}$, increasing the dose of iodide 30 grains every week till 30 or 45 grains are taken every day; if the patient cannot take this preparation I substitute the chloride of gold and sodium (gr. $\frac{3}{40}$ to gr. $\frac{3}{4}$ a day) or an arsenical preparation if nutrition requires to be stimulated, the patient being thin and pale or presenting symptoms of herpetism; or bromide of potassium or sodium if she is nervous or hysterical; the application of some resolvent ointment (mercury or the iodide of lead and potassium) to the hypogastrium and groins, or as an injection into the rectum and even into the vagina; an india-rubber abdominal belt to keep up a constant moisture round the pelvis and to retain the cataplasms in place at the menstrual period or when pain is increased; lastly, to terminate the treatment by hydropathy (general, never local, exceptionally sitz-baths of running water), alternating or associated with mineral waters, either sulphurous, such as Vernet, Luchon, Aix, or saline, such as Royat, Plombières, la Bourboule; or alkaline, such as Vichy, Andabres, Sylvanès; thus, I often prescribe the association of Vichy

waters internally and in baths (with injections) in the morning, and general hydropathy in the afternoon, and I have seen the good effects produced by these means in terminating a treatment successfully begun. It is especially in cases of venous congestive metritis, which is so difficult to cure, that courses of hydropathy, repeated twice a year and associated with the use of alteratives, exercise and good hygiene are indispensable in restoring patients to health.

OVARITIS AND SALPINGITIS.

1. *Ovarian Inflammation.*

Ovaritis or *oophoritis* is inflammation of the ovary. There are not only differences of degree but differences of nature between this inflammation and catamenial fluxion. Tilt¹ seems to have ignored this fact in creating the term subacute ovaritis, divided into amenorrhœic, dysmenorrhœic, and menorrhagic; it seems to me to be rather an irregularity of the ovarian catamenial fluxion, or a chronic ovaritis, producing menstrual disorders which may affect the three principal forms which we have specially described. Aran² on the other hand has exaggerated the difficulty there is in separating physiological or slightly disordered ovulation from ovaritis. The ovarian functions being the most important amongst those of the genital organs, all the others being in a measure subordinate to them, it is not surprising that diseases of the ovaries, and especially their inflammation, should react still more than those of the uterus, and sometimes in the most troublesome way, not only on the genital economy but on the whole organism. With the ovaries, as with the uterus, morbid states without neoplasms are not limited to inflammation. Fluxion, congestion, engorgement, hypertrophy, neuralgia seem to me as much entitled to have a place here as acute and chronic inflammation. Nevertheless I have not thought it necessary to multiply descriptions and devote a chapter to every distinct morbid condition. I have abstained from doing so for two reasons: the first is that some of these morbid conditions, such as fluxion and congestion, are recognised by signs analogous to those of uterine fluxion and congestion and require almost the same treatment; the second is that the others, such as engorgement, hypertrophy, neuralgia, cannot always be distinguished from maladies of the neighbouring organs. I shall content myself, therefore, apropos of the differential diagnosis of ovaritis, with giving a brief sketch of these various morbid states and of the treatment required.

Pathological Anatomy.—According to Boivin and Duges³ and Chéreau,⁴ the anatomical alterations of ovaritis may be connected with

¹ *On Uterine and Ovarian Inflammation*, p. 294. London, 1862.

² *Op. cit.*, p. 572.

³ *Op. cit.*, t. ii, p. 564.

⁴ *Mémoire pour servir à l'étude des maladies des ovaires*. Paris, 1844.

four principal stages: hyperæmia, tumefaction and softening, suppuration, grey softening and putrilaginous or gangrenous decay. To these must be added induration, which Chéreau rightly describes as characteristic of chronic ovaritis, and which is always accompanied, in this disease, by alterations of another kind.

Before describing the anatomical characters of these alterations, the periods of the malady to which they are related, and, as far as possible, the symptoms leading us to suspect them, I copy Scanzoni's¹ excellent description of an inflamed ovary met with accidentally in a woman suffering from pneumonia. "The autopsy showed, in the pelvis, to the right of the uterus, a coagulated mass of fibrin of the size of the fist, easily separated from the adjacent organs, and which evidently resulted from an effusion. After its removal the ovary was seen presenting a longitudinal diameter of $2\frac{1}{4}$ inches, whilst the transverse diameter was $1\frac{1}{2}$ inch, and the thickness of the organ about $1\frac{1}{2}$ inch. The ovary had an ovoid form, it was considerably enlarged, its surface was deep-blue and covered with numerous dilated veins, and towards the internal angle of the posterior surface the place of an ovarian vesicle which had burst a short time previously was recognised by its dark-red colour. The consistency of the organ was pasty, almost fluctuating at some points. In cutting it a considerable mass of blood flowed and the section showed the same violet colour and some venous vessels greatly engorged. The vesicle in question on which the point of rupture was easily seen was the size of a pea; it contained in its centre a little black liquid blood, whilst the walls were covered by a thick layer of fibrin. Two neighbouring vesicles presented almost the same dimensions, projecting slightly above the surface of the ovary; on opening them a serous sanguineous fluid was discharged. Towards the other extremity of the organ, where the congestion was less strong, the red less intense, and the consistency firmer, there was in the parenchyma an abscess of the size of a bean containing sanious pus mixed with blood. Beside this rather large abscess there were other smaller ones, the size of which varied from that of a millet seed to a pea, all situated deeply in the parenchyma and all containing sanious pus. The whole tissue was infiltrated with serosity, and the majority of the vesicles were visibly enlarged by an abundant accumulation of fluid. The pathological alterations observed in this ovary correspond exactly with the description of acute ovaritis given by some writers; considerable increase in the size of the organ, marked hyperæmia, traces of effusion into the vesicles, purulent centres in the parenchyma and fibrinous exudation on the peritoneal covering of the organ."

Gallard² remarks that this description represents a type of ovaritis extending to the whole organ and to all its elements: in fact, the alterations are threefold; they affect the vesicles, the parenchyma and the envelope. Is it always so? May the inflammation be limited to one of these tissues in place of extending to all simultaneously? It is difficult to believe that it runs its course in one of these tissues

¹ Op. cit., p. 392.

² *Gazette des hôpitaux*, July, August, October, 1869.

without affecting the others. However, I have seen alterations of the organ so limited to one or other of these elements that it seems to me beyond doubt that this anatomo-pathological distinction can be made: in some cases the peritoneum covering the organ is alone inflamed; adhesions unite it to the neighbouring organs, and bands retain the ovary in a vicious position, without any real change in the latter; the inflammation may also commence in a follicle and remain for a long time confined to the membranes composing it; the solid organic alterations so often met with in the ovary show us that the starting-point of the inflammatory phenomena is at other times limited to the parenchyma of this organ.¹ I think, therefore, we must admit general ovaritis and partial ovaritis, commencing in one of the three elements of the organ. Usually the latter soon extends to the whole of the ovary, for acute general ovaritis is much the most frequent; but the three forms usually co-exist, and treatment can hardly vary even if differential diagnosis were possible.

A more practical division is that of five degrees of intensity in the inflammation at five periods of the malady: 1st congestion, 2nd red softening, 3rd induration, 4th suppuration, 5th grey or gangrenous softening.

Besides these alterations, pathological anatomy shows that others exist, which cannot be connected with any of the five degrees enumerated above, because several of them are met with in various periods of the malady, without belonging especially to any one of them. Such are displacements of the ovaries, their adhesions to neighbouring organs (Fallopian tubes, uterus, bladder, intestine, &c.), perforations of ovarian abscesses, the presence of pus in the lymphatics and in the ovarian veins, the varicose dilatation of veins, &c. A second remark is that the alterations due to inflammation are manifested in various degrees on different points of the ovary: adhesion here, suppuration there; induration at one point, softening in another: this depends not only on the course which the malady follows in the organ, but also on the difference of structure of the various elements of which the ovary is composed. One last remark: ovaritis *alone* or *simple* is excessively rare: the peritoneum is always affected like the pleura in pneumonia; the Fallopian tube participates almost always in the inflammation, the uterus is often involved, primarily or consecutively, the broad ligament rarely escaping.

Etiology.—Ovaritis is most frequently developed in the puerperal state, and as a consequence of menstrual disorders. With the puerperal state are connected abortions, hard labour, obstetrical operations, want of care, fatigue, chills, &c. With disturbance of the menstrual function are connected all the causes which increase catamenial fluxion and ovarian congestion, *e. g.* hot baths, emmenagogues, &c., and those which increase the ovarian congestion by suddenly suppressing the catamenia, *e. g.* coitus during menstruation, a sudden chill, especially of the feet or lower part of the body, emotion, violent grief, &c.

¹ Every day brings additional proof of the diversity in the seat of ovaritis. Bouveret, *Annales de Gynécologie*, t. iv, p. 427.—Darolles, *ibid.*, t. vi, p. 419.

Ovaritis is developed also by the propagation of a pre-existing inflammation in the uterus, or of a metritis produced by a traumatism, and even by an inopportune cauterisation. Cauterisation by causing the metritis to pass from the chronic to the acute stage leads to the propagation of the inflammation to the Fallopian tubes and to the ovary. A violent inflammation of the vagina, especially if virulent, contagious and disposed to be propagated to the uterus or to the Fallopian tubes, may reach the ovaries. Therefore ovaritis may be due to the extension of blennorrhagia to one of the ovaries, the inflammation either reaching by degrees the internal parts of the uterine economy including the ovary, or else by a kind of metastasis favoured by a natural sympathy and the vascular communications between these two organs, it is transported suddenly from the vagina to the ovary, as in man from the urethra to the testicle. Ricord has described this kind of ovaritis as comparable to blennorrhagic orchitis. Bourraud¹ has related some interesting cases, and I have seen some also.

Thus delivery and the puerperal state, menstrual disorders and uterine inflammation are the principal causes of ovaritis. Direct traumatic causes may also produce the development of ovaritis, but the ovary, owing to its internal position and mobility, usually escapes their action. The general causes deserve our attention. Maladies may attack the ovary like other organs: amongst acute maladies we may mention variola as a sequel to which Beraud² has observed variolous ovaritis, which he compares to the variolous orchitis described by Velpeau and Gosselin; amongst chronic diseases we may count scrofula (*see* later, on Tuberculisation of the Ovary), syphilis (Nélaton has mentioned syphilitic ovaritis), gout and rheumatism (I have seen several cases of rheumatic ovaritis).

According to some physicians, ovaritis is often double; but Scanzoni³ says that it very often affects only one ovary, and I can affirm that, if both are affected, one is always much more diseased than the other, perhaps the left ovary more frequently than the right,⁴ but the ovaritis on one side does not only coexist with ovaritis on the other, it coexists still more frequently with inflammation of the Fallopian tube or corresponding broad ligament.

Ovaritis may be either acute or chronic; it is sometimes difficult to distinguish the two forms, all the more so that chronic ovaritis easily returns to the acute stage. Puerperal ovaritis is the most intense and the most dangerous form of acute ovaritis; it often terminates fatally in a few days. The most persistent chronic ovaritis often commences before marriage.

Diagnosis.—The diagnosis of chronic non-puerperal ovaritis in the first stage is difficult, and yet it is very important. A girl, two or three days after her period has commenced, feels pain in the iliac fossa, with radiations, nausea and vomiting; this pain becomes permanent

¹ *De l'ovarite blennorrhagique, Thèses.* Paris, 1847.

² *Archiv. génér. de Médecine*, 1859, 5^e série, t. xiii, p. 588.

³ *Op. cit.*, p. 399.

⁴ Chéreau, *op. cit.*, p. 155.

although diminished in degree, being increased at the monthly period ; menstrual disorders occur ; the patient is nervous and irritable ; she becomes emaciated, a dark ring forms under the eyes, her face is sallow ; she probably has ovaritis. Marriage, often recommended with the idea that it will regulate menstruation, increases the pain, leucorrhœa is set up and the young wife is sterile : ovaritis is more and more probable.

The importance of an early diagnosis is evident when we think of the many dangers to which the patient is exposed for want of it ; for ovaritis is a much more common disease than is supposed ; very often the ovaries are not examined, and very often the uterine complications are cured while the principal malady is ignored, ovarian inflammation being increased and suppuration produced by cauterising the cervix. Uncertainty of diagnosis would be less prejudicial in the latter case than in that of ovaritis at the commencement. The temporary fluxion, the more or less permanent congestion of the ovary, may indeed be taken for the beginning of inflammation of this organ. It is all the more desirable to recognise and to distinguish them as the treatment is not identical, although necessitated in both cases by the fear that the persistence of fluxion or congestion may favour the development of inflammation.

If, however, the diagnosis of the first stage is difficult, especially of chronic ovaritis in a girl, it is quite different with confirmed ovaritis especially of the acute form. The obscurity of the diagnosis depends on two almost opposite causes : either on the latent form or on the extreme intensity of the symptoms, in fact on a want of equilibrium which hinders observation.

Peritonitis especially, according to whether it is developed or not, may either produce this intensity of symptoms or leave them in obscurity. Acute and chronic ovaritis are very different with regard to the intensity of the symptoms and the order of their manifestations. Puerperal ovaritis is only the subacute form, generally accompanied by puerperal peritonitis.

Acute ovaritis—subjective signs.—Acute ovaritis may from its commencement be true acute ovaro-peritonitis. Its reaction on the organism is immediate, causing rigor, fever, nausea, vomiting, pain more or less acute, spontaneous or provoked, often very acute as in peritonitis, continuous, but with exacerbations which may be accompanied by hysterical fits. Added to these there is frequent desire for micturition, constipation, pain on going to stool, the impossibility of standing ; the patient is almost bent double when trying to walk ; it seems as if a bar of iron depressed the belly, from one iliac fossa to the other ; whilst raising the leg on the affected side, and decubitus on the healthy side cause acute pain followed by dragging ; the lochial and menstrual discharges are either suppressed or diminished.

In simple acute ovaritis the general reaction is less ; sometimes there is a little fever in the evening ; no vomiting, but distaste for food, dyspepsia, constipation, pain on going to stool and at micturition, with discomfort at some point of the abdomen. Chéreau describes the

following as symptoms of ovaritis occurring after suppression of the menses : aching in all the limbs, headache, thirst, and disorders of digestion. Standing, walking on an uneven road, a false step, extension of the leg on the same side as the ovaritis provoke pain, which is still more true of peri-uterine inflammation. The pain is so limited, that the patient may be able to place her finger on the starting point, which is situated in one of the iliac fossæ above the Fallopian ligament. From there it radiates towards the hypogastrium, the lumbo-sacral region, down the thigh to the calf, sometimes with numbness of the leg.

The termination of acute ovaritis may be added to the other subjective signs as a help to diagnosis. Ovaro-peritonitis may rapidly reach suppuration, general peritonitis and death ; or the phenomena may be alleviated, simple acute ovaritis alone remaining, with predominance of local symptoms. Reduced to this degree it may terminate by resolution, in spite of menstrual exacerbations, the only termination which can pass for a cure. It is only obtained in acute ovaritis at the period of congestion ; it is hardly possible when the malady has reached the stage of red softening. Recovery may take place in from three months to a year, with the exception of the persistence of abnormal sensibility and of some remains of ovarian trouble. Sometimes it reaches suppuration very quickly. The formation of pus is announced by increase of pain, erratic rigors, perspiration in the evening, more acute pain on pressure, diffuse tumefaction in the pelvis, or a circumscribed tumour, rarely as large as the fist, allowing obscure fluctuation to be perceived when pressed between the finger introduced into the vagina and the hand placed on the hypogastrium. When pus is formed in the ovarian vesicles it may remain encysted for a long time ; when produced in the parenchyma it makes more rapid progress. It may invade the whole ovary without going beyond it, retained by the fibrous covering, the resistance of which is increased by the false membranes deposited on its surface and forming a kind of lining. This resistance, increased by that of the adhesions which the ovary has contracted with the neighbouring parts of the serous membrane, fortunately as a rule prevents the abscess from opening into the peritoneum.

Termination by suppuration is relatively very rare, it being only on account of the extreme frequency of ovaritis that it has been met with so often.¹ It is serious for the ovary, for the neighbouring organs, for the whole organism which may succumb to peritonitis or pyæmia. It causes emaciation and discoloration of the face. Additional adhesions are established between the ovary and the neighbouring organs at each succeeding monthly period. Nevertheless the sac of the abscess becomes thinner and finally ruptures, the pus being effused all around. According to Chéreau, Tilt and others the abscess generally opens into the rectum. I have collected six such cases. Dupuytren, Andral,

¹ I think there has been an error of diagnosis in several cases ; it is easy to confound abscess of the ovary with inflammation of the broad ligament or iliac fossa ; abscess of the ovary often remains encysted.

Montault, Nauche, Boivin, Churchill, Peudefer, Bennet and others have described cases of the kind. Of all spontaneous openings it is the most desirable. However more than one patient has succumbed to this accident, either immediately or after some time from the effects of exhaustion caused by the purulent secretion. Bennet¹ mentions the case of a girl of fourteen, who after having menstruated once or twice was seized with hæmorrhage followed by anæmia; later on by emaciation, pain in the left iliac region, development of the corresponding ovary, discharge of pus and death with hydrencephalic symptoms.—Opening into the rectum causes tenesmus and a kind of dysentery from the contact of the pus with the intestine. When the abscess is not acute and cannot close immediately after being emptied, there is either an incessant excretion of pus or an alternation of occlusion with opening of the purulent centre, giving rise to the incessant recurrence of pain, fever, and all the accidents caused by each new distension of the abscess with pus and each new laceration of the imperfectly cicatrised wound.

Opening of the abscess into the vagina is rather less frequent. Husson, Dance, Cruveilhier have mentioned cases. I have seen three. This result appears favorable to cure; only it is sometimes difficult to discover the opening: we must remember this when desirous of enlarging the natural opening, or of making injections into the cavity of the abscess.—Exceptionally ovarian abscesses may open into the bladder, but this involves an abnormal position of the inflamed ovary. Andral and Murat have related two cases and Gallard a third, in which nothing was wanting but confirmation by necropsy.—The pus may pass into the oviduct and remain there, dilating it (Laumonier), or be discharged into the uterus and thence externally (Chambon de Montaux, Chéreau); or into the body of the uterus, and thence into the vagina (Boivin).—It may make a way for itself into the cæcum (Dupuytren), into the colon (Montault), or following the round ligament or the crural vessels, be discharged by the inguinal canal or by the crural arch; or after previous peritoneal adhesions it may escape through the abdominal parietes, at the iliac fossa (I have seen two such cases); Bennet (the *Lancet*, July, 1848) also mentions two cases.—The abscess may very exceptionally open into the peritoneum, causing fatal peritonitis. The pus has even been seen to make two ways for itself, *e. g.* by the bladder and the uterus (Boivin).

After the abscess has opened, pus may be reproduced indefinitely, being discharged by the opening and causing hectic fever; the discharge is sometimes continuous, sometimes intermittent, and may issue from several points successively. It may, however, be cured even after capillary puncture, and the general health may be restored.

Objective signs.—Pressure from above downwards, on the painful point of the abdomen, increases pain so much as to extort a cry from the patient. Sometimes the ovary may be felt by abdominal palpation: I have often discovered it, high up, when the patients felt it

¹ *New York Journal*, Sept., 1846.

themselves. It is perceived all the more plainly, because often retained on a level with the iliac fossa by adhesions.

The vagina is hot, sometimes dry, sometimes moist; the uterus frequently deviated, but not so much so as in hematocele; the cervix having variable disorders, being usually engorged or œdematous. The uterus has lost part of its mobility owing to adhesions between the ovary and the neighbouring organs; in one direction especially it has become fixed; when we try to remove it from the diseased ovary great pain is elicited.

In the vaginal *cul-de-sac* answering to the abnormal fixity of the uterus the finger sometimes encounters resistance, sometimes a small tumour; at this point resistance is experienced and excruciating pain sometimes produced by pressure. It is by rectal touch, however, in following the lateral borders of the uterus that we can best discover a tumour of the size of a nut or a small egg, very painful, the situation of which is variable, depending on the point at which the inflamed ovary is adherent; by associating abdominal palpation with touch a still more precise diagnosis can be made.

Chronic ovaritis—subjective signs.—The pain which Scanzoni describes as a disagreeable sensation is not always so acute as has been said; it is sometimes sharp, sometimes burning, extending up the loins during menstruation: patients say that it seems to them as if a hot coal were placed in the pelvis. It continues in a modified degree during the intercalary period; it causes permanent discomfort with darting exacerbations after exercise or fatigue. It is in the middle of or a little above the fold of the groin, not extending to the iliac fossa nor generally causing tension of the abdominal parietes. It radiates from this point, principally along the corresponding thigh to the knee, causing numbness or even coldness of the leg; it is increased by walking, standing, rising, effort of any kind, pressure from above downwards, coitus and menstruation. In cases where the ovary adheres to the posterior surface of the lower border of the uterus, so that the penis touches it during coitus, such terrible pain is caused that intercourse becomes impossible. This pain is particularly sharp some days after menstruation, or for one or two days before it, and very often is not alleviated by the catamenial flow. The first symptoms of chronic ovaritis are menstrual disorders, menorrhagia or amenorrhœa, or menorrhagia and amenorrhœa may alternate with pain in the ovarian region during the period, a symptom often occurring in young girls. These disorders seldom consist in amenorrhœa, but rather in a diminution, delay, or suppression of some months. In some chronic cases there is menorrhagia, hæmorrhage even occurring in the intermenstrual period, which is always in advance; but in that case there is also metritis, or at least leucorrhœa, itching, heat, with vulval and vaginal desquamation. The symptoms of neighbourhood are: frequent desire for micturition, scalding urine loaded with urates and phosphates, constipation, hæmorrhoidal tumours, tenesmus, uterine colics, constriction of the vagina or vulva. These are often unimportant on account of the small size of the tumour. The general subjective signs

are those of chronic metritis, but more numerous and occurring more rapidly and perhaps still more marked, especially those of the nervous system. Disordered digestion causes nausea, sympathetic vomiting, principally at the commencement of the malady or at the time of the painful attacks; it causes epigastric sensibility, loss of appetite, emaciation, depression, suffering, paleness, palpitation, breathlessness, arterial pulsation, fainting, in short chloro-anæmia, especially in patients suffering from leucorrhœa and menorrhagia. Disorders of the nervous system are not less serious. Diseases of the ovaries like those of the testicles, seem to affect the patient morally still more than do those of the uterus. Women so affected become morbidly sensitive; they experience an indefinable discomfort and suffer from erratic pains on the track of the intercostal, lumbar and sacral nerves, principally on the left side, with painful irradiations into the corresponding leg; spasms of the pharynx, glottis and sphincters of the bladder, anus and vulva and various hysterical phenomena such as hyperæsthesia and anæsthesia, in fact all the *cortège* of hysteria except the convulsive fits, which are rare. The gravity of these symptoms is not surprising when we remember that of all the maladies of the uterine system, chronic ovaritis is one of those which furnishes the most dangerous cases.

Ovaritis primarily chronic has an extremely slow course, but it is increased by menstruation and coitus. There is exacerbation at every monthly period, till at last fever breaks out, and pain increases so as to become intolerable. This passage to the acute state is serious, because it sometimes determines formidable accidents: the rupture of an ovarian abscess, circumscribed peritonitis becoming generalised on the slightest cause, increasing debility, pyæmia itself and finally death. Aran gives the case of a woman in whom the introduction of a pessary led to these fatal results. Whilst an inflammatory centre exists in the ovary or in one of the pelvic organs, an acute attack may occur at any moment. A more gradual but not less dangerous consequence of ovaritis is the development of a cyst. But even when it does not pass to the acute form causing perimetritis or general peritonitis, chronic ovaritis, owing to its duration, has not the less serious consequences: the gradual debility of patients and the serious disturbance of their general health dispose them to contract other diseases, and expose them to the attacks of the various diatheses, especially the tuberculous.

Supposing the patient escapes all these dangers, chronic ovaritis may terminate by induration and atrophy. This transformation of the organ is not strictly speaking a cure; but it may cause the cessation of painful phenomena and the general disturbance of health. Following red softening, it is characterised by a hyperplasia and a new formation of connective tissue; this tissue ends by stifling the other elements: the ovary either remains voluminous while becoming fibrous or cartilaginous, or it may atrophy and shrink, the ovarian vesicles and ovules disappearing. The small vesicles as well as the large are surrounded by peritoneal adhesions, the visible remains of the inflam-

mation which has caused the degeneration. Fatty degeneration may also produce atrophy. When both ovaries are affected complete and irremediable sterility is the result, for the malady goes on increasing with time in place of being cured.

Objective signs.—Palpation is insufficient, for, as in acute ovaritis, the ovary is hidden in the pelvis, lying close to the uterus or adhering to it. The small size of the tumour allows of its escaping observation in a superficial examination. Vaginal and rectal touch alone lead to diagnosis. The passage of the finger through the vulva sometimes provokes very acute pain, on account of the contraction of the sphincters. The vagina is very rarely hot and is often moist from mucus. The cervix looks healthy, half open, and somewhat œdematous. Usually the uterus is inclined to one side, its mobility being diminished; it is impossible to push it from the painful to the opposite side without causing dragging, which increases the pain as well as the curve existing in the corresponding vaginal *cul-de-sac*, but without allowing the discovery of an indistinctly circumscribed tumour which can only be diagnosed by rectal touch. The inflamed ovary is more accessible to our investigations than the healthy one, on account of its size and weight which make it fall behind the uterus, retroverting the latter slightly. This displacement of the ovary into the posterior *cul-de-sac* may be considered as the rule though there are numerous exceptions. The diseased ovary, whilst descending lower than the healthy one, is prevented by the utero-ovarian ligament from being precipitated to the bottom of the posterior peritoneal *cul-de-sac*; it is situated behind and on one side of the uterus answering to the vaginal insertions of the cervix where it may be retained by adhesions. Hence a dragging on the uterus, and a slight unsteadiness of this organ; if this slight retroversion is not produced, the ovary remains elevated. Hence the utility of rectal touch so strongly recommended by Lowenhardt, of Preslaw, in 1835, and since then by Lisfranc, Aran, and all gynæcologists; hence also the importance of the association of rectal with vaginal touch recommended by Gallard.¹ Unless adhesions keep the ovary in place, this organ escapes from the simultaneous pressure exercised by the two fingers that have seized it. We may add that, in order that the fingers may reach and seize the retro-uterine tumour supposed to be the ovary, hypogastric pressure must be combined with this double touch in order to press the viscera into the pelvic cavity.

By what signs can we know that this tumour is really the ovary? It is an ovoid body, sometimes elongated, a little flattened from before backwards, adhering to the lateral or posterior part of the uterus, or separated from this organ by a more or less deep groove, sometimes mobile, sometimes not. In consistency it is hardly elastic, never indurated; its surface, sometimes smooth and polished, sometimes indented and irregular, sometimes elastic, is usually rounded and resistant. The sensibility is extreme and is revealed by pressure, sometimes causing acute pain; for notwithstanding what has been said

¹ *Gazette des hôpitaux*, July, August, 1869.

by some writers, the ovary is very sensitive normally, and when this sensibility is increased by inflammation, pressure becomes most painful. The greater size of the tumours of ovaritis prevent their being confounded with those of retro-uterine adenitis which occupies almost the same place and is also very painful.

Differential diagnosis.—Ovaritis must be distinguished: 1, from other ovarian diseases; 2, from uterine and peri-uterine diseases.

1. The ovarian diseases which have to be distinguished from ovaritis are fluxion, congestion, œdema, apoplexy, engorgement, hypertrophy, &c. Morbid fluxion of the ovaries, like that of the uterus, occurs chiefly at puberty, at menstruation, on the occasion of venereal orgasm, &c. It exceeds the fluxion which is normal to those organs under such circumstances. It is manifested not only by pain, but also by stronger venereal excitement, discomfort in the iliac and lumbar regions, symptoms of neighbourhood, &c. Ovarian congestion may be met with in girls; it is sometimes produced by a congenital tendency, or in consequence of the sudden suppression of the menses, or of the existence of dysmenorrhœa; it persists or is reproduced under the influence of a general state such as plethora, impoverished constitution, &c., or from a diathetic affection such as rheumatism. It has many symptoms in common with uterine congestion (pain, heat, persistent discomfort in the iliac region and in the cavity), and as the latter differs from metritis, so ovarian congestion differs from ovaritis in the symptoms being less acute and continuous; the heat is less intense and the pain less excruciating, even when provoked by compressing the organ directly.

Serous infiltration, a kind of œdema of the ovary, has been described by Morgagni¹ as occurring in a woman who succumbed after delivery. According to Cruveilhier² it must not be confounded with ovarian inflammation; but it seems to me difficult to distinguish it from the softening which characterises one of the stages of this inflammation and which may be accompanied by an interstitial sanguineous effusion followed by the coagulation of the fibrin and infiltration of a yellowish serosity between the tissues of the organ.

Hæmorrhage of the ovaries may be interstitial or vesicular, may take place slowly or suddenly (apoplexy), be contained within the envelope of the organ or be effused externally (hematocele), may accompany other lesions or result from a simple alteration of the vascular system (congestion, lacerations of the capillaries, &c.). It usually occurs suddenly during the menstrual period, after physical or moral emotion, on the occasion of venereal excesses, sometimes during pregnancy. The sudden appearance of symptoms of peritonitis added to those of internal hæmorrhage distinguishes hæmorrhages with effusion of blood into the peritoneum from interstitial hæmorrhages and from simple ovaritis.

Does engorgement exist? Is it a step towards induration, described as one of the terminations of inflammation and as characteristic of

¹ *De sedibus*, &c. Epist. xlvi, §. 27.

² *Anatomie pathologique*, 13^e liv., p. 13.

chronic ovaritis ? It is difficult to judge the question, and still more so to diagnose such a morbid state.

Hypertrophy may either affect all the various elements of the ovary or each separately. In describing organic lesions we shall see that it gives rise not only to unilocular and multilocular cysts, to cysto-fibromata, to cysto-sarcomata, but also to simple fibromata, and that the ovary, by hypertrophy of the fibrous tissue and atrophy of the Graafian vesicles, may be transformed into a more or less voluminous body, hard, compact, fibrous, fibro-cartilaginous and even stony at some points. These transformations may be consecutive to ovaritis. The slow development, the tumour, the tolerance of the malady by the organism are the elements of a differential diagnosis between these degenerations and ovaritis strictly so called. Tubercle and cancer are not so well tolerated; in addition to the symptoms of ovaritis there are the local symptoms produced by the increased size of the ovary or the extension of the malady to the neighbouring organs, and the general symptoms resulting from the progress of cachexy.

Ovarian neuralgia is distinguished by the absence of all signs of inflammation except pain; this pain itself has special characters: it is excruciating, it darts upwards to the loins and sometimes downwards to the vagina, urethra, and pubic symphysis; it is not increased by pressure, frequently even appearing to be diminished by sustained pressure; the ovary cannot be reached per vaginam, for it does not usually descend as in ovaritis, but seems on the contrary in some patients rather to have ascended; the pain may be strong enough to determine nausea, vomiting or hysterical symptoms; it comes by fits, not always coinciding with the monthly period; it is often accompanied by neuralgia in other regions, especially by lumbo-abdominal neuralgia. Lastly, a suppurating cyst must not be confounded with an abscess resulting from ovaritis. The cyst is always much larger than the abscess; it has no tendency to open spontaneously; it is situated in the abdomen in place of being contained in the pelvis; it has given signs of its presence and developed to some extent before suppurating; the local and general symptoms of inflammation and of the formation of pus have therefore followed the development of the tumour in place of preceding it. Besides those cysts the internal membrane of which becomes inflamed and suppurates after puncture, there are some which are primarily purulent. I once removed an ovarian cyst which contained nothing but pus; it was formed after delivery; everything was going on well till the eleventh day, when the patient succumbed to serous diarrhœa.

2. Ovaritis must also be distinguished from uterine and peri-uterine inflammation. Not only may ovaritis be confounded with maladies of the neighbouring organs, but it is also almost necessarily accompanied by inflammation of the Fallopian tube and peritoneum. The frequency of ovaritis has been exaggerated by Boivin and Dugès, Chéreau and Lisfranc, whilst that of peri-uterine inflammation, abscesses of the broad ligaments and pelvic peritonitis has been exaggerated by more modern practitioners. For while it is easy to diagnose a retro-uterine phlegmon

it is very difficult to distinguish a lateral one from ovaritis. It is certain that in a number of cases peri-uterine phlegmasias are constituted, as we shall afterwards show, by inflammation of the peri-uterine cellular tissue, of the pelvic peritoneum, ovary and Fallopian tube, or even of the uterus, without its being possible to establish exactly which tissue was first affected and which most acutely inflamed.

Neuralgia, especially lumbo-abdominal neuralgia, presents circumscribed points of pain which do not exist in simple ovaritis. Metritis is distinguished from ovaritis by the following characteristics: the pain is median, sharp, increased by pressure, especially by bimanual palpation, and also by movements transmitted to the organ, which is not the case in ovaritis, unless the body of the uterus is pressed against the inflamed ovary.

Peritonitis is characterised by acute pain produced by the slightest contact and forbidding any thorough examination by pressure of the abdominal parietes or by vaginal touch. In place of simple nausea or vomiting of food there is bilious green vomiting, hiccough, &c. A peri-uterine phlegmon determines a considerable elevation of the temperature of the vagina, puffiness of the tissues, which are hard and resistant although œdematous and the formation of a tumour which is fixed and does not fly from the finger, adhering to the neighbouring tissues and making them adhere together. The uterus is no longer mobile, but fixed in the midst of inflamed tissues. The tumour projects into the vagina, forming a protuberance all round the cervix or in one of the *culs-de-sac* which becomes effaced; it presents arterial pulsation on its surface. Retro- or peri-uterine adenitis, whilst occupying almost the same place, is less extensive than ovaritis; I do not doubt, however, that it has sometimes been confounded with it. In addition to the difference of size, the simultaneous presence of analogous small tumours in the neighbourhood should allow of its being distinguished.

I must now indicate the differential characters which enable us to distinguish chronic ovaritis or an ovarian abscess from a pelvic abscess or from a phlegmon of the iliac fossa. The form of the tumour and its relations facilitate this distinction. The form of the tumour is ovoid and circumscribed in place of being diffused; its relations with the neighbouring parts are more clearly defined; there exists a more or less marked interval between the tumour formed by the ovary and the pelvic organs or ilium. We must, however, remember that these characters disappear as soon as the ovaritis has determined around it, as frequently happens, more or less extensive pelvic peritonitis with suppuration, or at least exudation, adhesions, &c.

Treatment.—It cannot be denied that acute ovaritis is one of the most dangerous of diseases, while chronic ovaritis is one of the most difficult to treat and to cure, and that during its whole course it exposes patients to continual danger from peritonitis. Therefore it must be treated in spite of its reputed character of being incurable; for even if treatment is insufficient to restore the organ to its original integrity it may at least prevent serious terminations and enable the system

to tolerate the malady. Lastly, by the alterations which it determines in the ovary or the vicious adhesions which it establishes between this organ and the neighbouring parts, it becomes an almost incurable cause of sterility : an additional reason for treating it intelligently and energetically. In the treatment of ovaritis especially patients must be warned that months and years are required to effect a cure.

As a rule perfect rest should be prescribed for the genital system, even in the treatment of chronic ovaritis; but exceptions may be made in the case of some women as described at page 167. As for the desirability of marriage as advised by Gallard for girls suffering from commencing ovaritis, with the double view of preventing sterility (which the malady could not fail to produce at a later period) and of favouring resolution (by the repose from ovulation given to the organ during the nine months of pregnancy), I think it is important to make the distinction between inflammation of the ovary strictly so called, which is always aggravated by marital intercourse, and the simple congestion or fluxion of this organ which not only can tolerate coitus, but may be favorably influenced by pregnancy.

The indications for treatment are reduced to the two following : to subdue the inflammation by antiphlogistic treatment proportioned to its intensity; to promote resolution of the diseased ovary and of the plastic products formed in its parenchyma or around it, and if necessary to evacuate pus, while supporting the strength of patients, favouring nutrition and restoring the constitution.

I. *Antiphlogistic treatment* ought to be proportioned to the intensity and to the complications of the acute form. In acute ovaritis complicated with peritonitis, in ovaro-peritonitis properly so called, it cannot be too energetic. In simple acute and in chronic ovaritis, the long continued use of the same means should be substituted for the energy used during a few days in complicated acute ovaritis. Bloodletting constitutes the first and the most energetic means. Bleeding is seldom indicated; but leeches and scarifications may be applied *largâ manu*, and repeated at longer or shorter intervals according to the case.

In superacute ovaritis, 15 or 30 leeches may be applied to the iliac fossa or hypogastrium, or the scarificator may be used, so as to keep up a flow of blood for some hours. The perfect calm following this first application and the use of other means must be distrusted. When abdominal palpation causes pain, or if in the absence of this sign the temperature of the vagina continues high, and the tumour occupying the lateral portion of the pelvis outside the uterus is still sensitive to pressure, bloodletting should again be resorted to. If necessary, leeches and the scarificator may be applied three or four days successively, diminishing the number each day. In simple acute and in chronic ovaritis, the diminution of pain allows of the application of leeches not only to the abdomen but to the cervix, which is preferable, because depletion of the utero-ovarian vascular system being quicker a smaller number of leeches produces more effect, besides which ovaritis is frequently accompanied by hyperæmia of the uterus or even by metritis. Alleviation is often immediate; but sometimes on the

contrary fresh applications must be made several days running or at short intervals. In chronic ovaritis it is well, as a rule, to leave an interval of a month at least between two consecutive applications, and they should always be made immediately after and not before menstruation. We must take advantage of the time when menstrual congestion has terminated, to empty the utero-ovarian vascular system. If the patient is plethoric and it is desirable to bleed before the monthly period, blood should be drawn from the arm as a means of revulsion to prevent the approaching catamenia from being as considerable as usual.

The application of leeches in cases of subacute ovaritis should be immediately followed by the use of auxiliary means, such as rest, diluents, emollient and sedative cataplasms, an emeto-cathartic if there is gastric derangement, or a simple laxative or enema if there is intestinal irritation, and sedatives and resolvents in peritonitis, *i. e.* opium and mercurial frictions. There need be no fear of giving opium in large doses if the precaution is taken to administer it less frequently as soon as a sedative effect is produced, and to cease it entirely if the patient shows a tendency to remain drowsy. Here as in other cases, opium may when necessary be replaced by morphia either administered internally or by hypodermic injection, but opium when tolerated is preferable. It is of course needless to employ it in chronic ovaritis. Frictions should be made with mercurial and belladonna ointment. On such occasions it should be used like leeches *largâ manu*, *i. e.* one ounce of ointment should be spread on the abdomen every five or six hours, and covered by a large poultice of linseed meal hot and very moist, in which a few drops of laudanum may be sprinkled. A thick layer of cotton wool should be placed over this with oil silk above all. The following morning patients take a bath, and after having dried the abdomen well keep it covered all day with a flannel bandage unless there is an indication to have the belly constantly covered with ointment and cotton wool to keep up a moist heat favorable to resolution.

Baths and irrigations are valuable auxiliaries which should be prescribed as soon as they can be used without fatigue to patients. We begin with prolonged warm general baths (emollient, gelatinous or alkaline) with vaginal irrigation every day or every other day; they should soon be replaced by hot irrigations. At a later period, though rarely in cases of chronic ovaritis without exacerbation, tepid and cold sitz-baths may be substituted with cold irrigations and enemata, which constitute a suitable means for subduing the continual tendency to renewed fluxion towards the ovary, and for facilitating resolution of the chronic phlegmasy by their tonic and slightly revulsive action on the skin.

II. *Resolvent medication* ought to follow antiphlogistic treatment especially in chronic ovaritis; it should be continued for a long time, for it requires months and even years to obtain a cure. We can measure the progress made towards health by the amelioration effected in the performance of the menstrual function.

Resolvent medication consists in the internal use of alteratives, mercurials, iodide of potassium, oxide of gold, &c.; and of the external use of the same medicaments, frictions of mercurial ointment, tincture of iodine, and even blisters, the utility of which is undoubted, although not equally successful in all patients, and less so in cases of ovaritis than in peri-uterine inflammation or pelvic phlegmon; cauterisation is preferable, and igni-punctures from being less painful and causing less cicatricial deformity are doubly preferable, because they can be resorted to again. In cases of ovaritis I have found the use of rectal injections of resolvent ointment of great use: this means is very superior to suppositories, as it enables us to apply the medicament in sufficient quantity to the diseased organ and to vary the composition according to the condition and tolerance of the patient. We must also remember that the choice of these medicaments is not indifferent, that after inflammation is once fixed in the ovary the organ often remains diseased, in spite of the most energetic and most rational antiphlogistic treatment, because this inflammation has sufficed to determine on the ovary the localisation of a diathetic condition to the cure of which even ovaritis is secondary.

In chronic ovaritis I have frequently observed what I have also remarked in orchitis: that the rheumatic, herpetic, scrofulous or tuberculous diathesis may localise itself on the diseased ovary and keep up hyperæmia, fluxion, prolonged pain, or produce still more serious alterations. Copland¹ has described rheumatic ovaritis, giving two cases; Gallard² has published another; and I have collected several. Henry Bennet³ describes a case of death due to a tuberculous deposit in the ovary; in three cases of the same kind the pus made way for itself through the abdominal wall. It is evident that the means of treatment ought to vary according to the nature of the diathetic affection, which takes a more or less considerable part in the prolongation of the ovaritis. For instance I have succeeded in curing chronic ovaritis of two years' duration in a very scrofulous woman by iodide of potassium in large doses, followed by the administration of oxide of gold continued for a long time, associated with residence at the sea-side during the summer, the patient taking two baths a day and resting for eight days every month. I have cured three cases of chronic ovaritis with sulphur water taken internally as well as in baths, combined with cold douches on the loins, in which alkaline baths, associated with the ordinary resolvents, had produced no effect. In one case, about which I was almost in despair as to the cause (there only being very slight external manifestations of the herpetic diathesis), I tried arsenical preparations followed by a season at Avène (Hérault) and was successful.

The addition of carbonate of soda or sea-salt to sitz-baths may be made when acute ovaritis passes into the chronic stage. General baths (alkaline or chlorinated, or both), natural waters such as those

¹ *Gazette médicale de Paris*, 1830, p. 362.

² *Gazette des hôpitaux*, October, 1869.

³ *The Lancet*, July, 1848.

of Plombières, Vichy, Vals and Boulou, purgatives from time to time, irrigations with cold water, cold applications to the abdomen, cold sitz-baths and douches, in fact hydropathy: these are the resolvents usually indicated associated with the medicaments just referred to in the treatment of chronic ovaritis.

III. The frequent *complications* which exist in the uterus, the co-existence of leucorrhœa, ulceration of the cervix and vulval pruritus, require treatment suitable for these various morbid states. There is one more indication to be fulfilled, viz. to facilitate digestion, relieve nervous symptoms, stimulate nutrition and improve the condition of the blood by exercise, generous diet, tonics, iron, and hydropathy.

Lastly, if an *abscess* has formed projecting into the vagina or rectum, the rapid increase of which may cause the fear of its opening in an unfavorable direction, after having made an *exploratory puncture*, the *pus* should be evacuated by the vagina and detersive or slightly irritant injections made into the centre. When the abscess points towards the abdominal wall it should be opened with Vienna paste according to the method employed in opening abscesses of the liver, so as to prevent the effusion of pus into the peritoneal cavity: the scar is incised and excised every day, in order to apply more Vienna paste to the wound and so get nearer the centre, after having determined adhesions in the neighbourhood.

Faures¹ describes a case of ovaritis followed by suppuration, in which the artificial opening of the abscess above the crural arch was followed by cure. I have lately seen a similar case, and another in which, after numerous applications of the cauterium to the left hypogastric and iliac regions, the abscess opened spontaneously near the linea alba; the patient was cured.

2. *Inflammation of the Fallopian Tube*

Salpingitis (inflammation of the Fallopian tube), hardly mentioned by West (1858) and Nonat, is described by Scanzoni, Aran and Becquerel.

Inflammation is easily developed in the Fallopian tube, on account of the continuity of this canal with the peritoneum on the one hand, and with the uterine mucous membrane on the other; but it rarely occurs unaccompanied by ovaritis or pelvi-peritonitis. Usually there is simultaneous inflammation of the Fallopian tube and ovary, this double inflammation being very similar to peri-uterine inflammation. When salpingitis exists alone it may pass unobserved: lesions characterising it are met with in women who have never complained, and yet, according to statistics, diseases of the oviducts alone are more frequent than those of the ovaries alone. Scanzoni² thinks that inflammation of the Fallopian tube, and especially inflammation of its mucous membrane, which he calls catarrh, almost always accompany an analogous affection of the mucous membrane of the uterus or vagina. Salpingitis is often double. It exists simultaneously or suc-

¹ *Gazette hebdomad.*, v, 547.

² *Op. cit.*, p. 365, et seq.

cessively on both sides. It may be either acute or chronic. In acute inflammation the Fallopian tube becomes entirely or partially fixed and adherent to the neighbouring organs, is still more flexuous than normally, is distended by fluid and tumefied; the walls become thick, soft, dark red in colour, with or without vascular arborisation. The fringes of the fimbriated extremity which are reddish, infiltrated and sometimes adherent to the neighbouring organs, are usually bent down and applied to one of the organs to which they adhere. The mucous membrane is red, swollen, moistened with a fluid composed chiefly of epithelial cells and sometimes of pus. When the fimbriated extremity is obliterated, especially if the *ostium uterinum* is so also, there is an

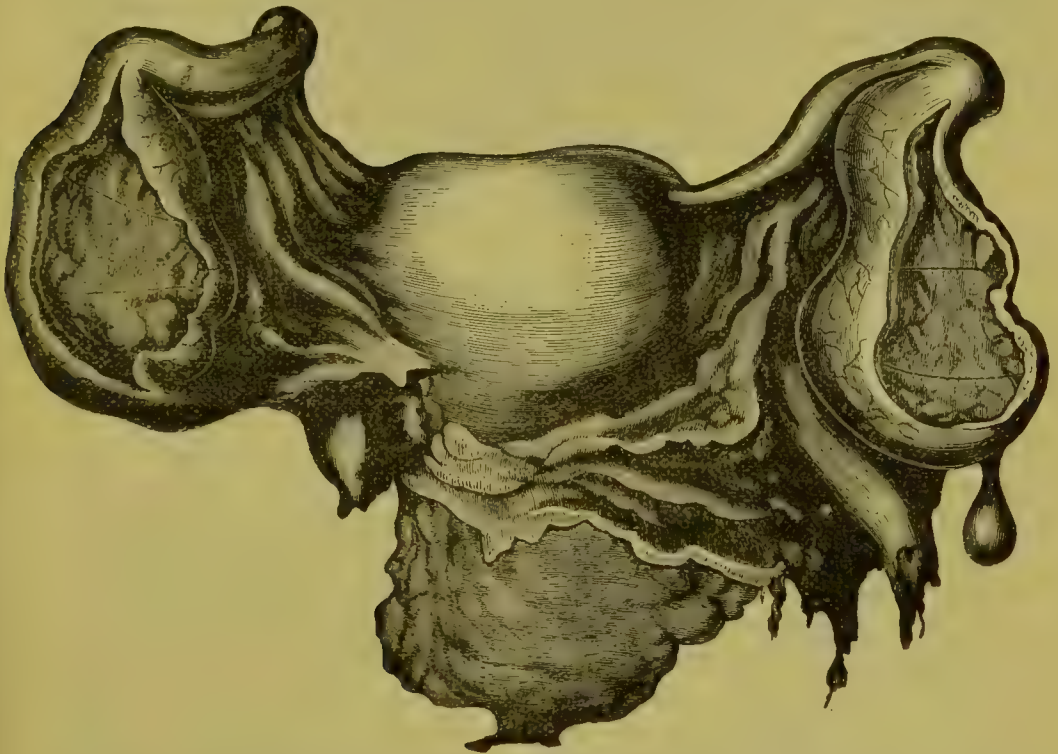


FIG. 316.—Fallopian tubes thickened by inflammation and distended by a collection of fluid (after Hooper, *The Morbid Anatomy of the Human Uterus and its Appendages, with Illustrations of its Organic Diseases*, pl. in-4. London, 1832).

accumulation of fluid distending the cavity of the Fallopian tube. It is exceptional to see these morbid products discharged into the peritoneum,¹ and when peritonitis is developed it is usually due, not to an effusion, but to the propagation of inflammation by continuity of tissue.

In chronic inflammation the Fallopian tube is two or three times the size of the organ normally, in colour it is slaty grey, the walls are 4 or 5 millimetres in thickness, of firm consistency, almost obliterating the cavity in which pus is not accumulated unless there are adhesions; the mucous membrane is greyish, thickened and resistant.

¹ Puech has published a remarkable case of this kind (*Gazette des hôpitaux*, 1860, pp. 517 and 522).

Salpingitis may be complicated by inflammation of the uterine mucous membrane, by obliterations from adhesions formed with the neighbouring parts, or by the fringes of the fimbriated extremity adhering together, and by the accumulation in its cavity of a serous or sero-mucous fluid incorrectly called *dropsy*. The usual seat of this dropsy is the abdominal extremity of the tubes. Scanzoni says that they may be folded back at several points, divided into five, six, or even a larger number of sacs of various sizes, resulting from as many obliterations of the canal. He has seen one of these tumours equal in size the head of a child of ten years; but they do not generally exceed the size of the fist. At other times external adhesions close the tube and there may be dropsy without inflammation; sometimes the fluid is contained in a cyst of the tube or in multiple cysts which do not communicate with each other.

A considerable number of cases are recorded in which the fluid contained in the tube appears to have made a way for itself through the uterus or vagina.

Although this *profluent dropsy* of the tubes as Rokitansky calls it has been proved to exist, Kiwisch observes that the same symptoms may result from the perforation of an ovarian cyst or from hydrorrhœa of the uterus, and that it is surprising that a discharge from the abdominal extremity of the tubes into the peritoneal cavity has not been observed, since it is nearer the seat of the dropsy. In such cases, however, this extremity is often obliterated, and Scanzoni,¹ who mentions these objections, gives the details of an autopsy proving the possibility of such discharges by the uterine extremity of the tubes into the womb and vagina. These cases, however, are very rare.

The causes of salpingitis are uncertain; abortion, delivery, previous inflammation of the uterus seem to determine it. It may possibly result from ovaritis, pelvic peritonitis, or even be idiopathic, but more frequently it is propagated from acute endometritis.

Diagnosis.—There is the same uncertainty with regard to the diagnosis. Acute inflammation may be confounded with ovaritis, metritis (especially when internal) pelvic or generalised peritonitis; chronic inflammation with chronic internal metritis which is often concomitant. Kiwisch gives as a sign of inflammation and dropsy of the tubes the presence of elongated, mammillated, elastic tumours in emaciated women on the lateral and upper portions of the uterus on both sides. I agree with Aran and Scanzoni that this sign is not sufficient; for other pelvic organs, multiple adhesions, the ovaries, the inflamed and tumefied broad ligaments may be taken for the tubes. In the case of salpingitis the kind of mammillated, undulating, irregular and painful cord formed by the congested tube, is perceived higher up than in the case of phlegmon of the broad ligament: it is attached to the ovary and uterus, and occupies less than phlegmon of the broad ligament the corresponding side of the pelvic cavity. It is not uncommon to observe it on both sides simultaneously or successively, the inflammation extending from the uterus to the tube, to the ovary of one side,

¹ Op. cit., p. 367.

and soon afterwards, at a monthly period, when the patient is thought to be cured, it reaches the tube and then the ovary of the other side. I have diagnosed salpingitis from these signs, the autopsy proving that I was correct. In order to be certain, we must be able to recognise the ovary and distinguish it from the diseased tube, which is very difficult especially in the pathological state. In a doubtful case the probability is in favour of ovarian disease, as the latter is more common than salpingitis. Aran describes a case of tubal abscess mistaken by himself for abscess of the ovary. Digital touch associated with palpation indicates the form and seat of the inflammatory tubal tumour. A bougie might be introduced into the tube if the uterus had been previously dilated by a *retentum*. Scanzoni says that simple catarrh of the tubes (inflammation of the mucous membrane) is never, during life, accompanied by symptoms allowing of its being diagnosed, and frequently dropsical dilatations of the tubes have persisted for years, without presenting any morbid phenomenon of importance. My own observations have convinced me that this malady always proceeds in this way when there is no peritoneal inflammation; when there is, the symptoms are very marked, especially when perforation of a tubal abscess is the cause of the peritonitis. Accumulations of pus in the tube, real abscesses, which Scanzoni thinks are almost always connected with the puerperal state, expose to the same accidents as ovarian or pelvic abscesses. Observation has proved that they may open into the rectum (Scanzoni relates a case), vagina or peritoneum, and that in the latter case death is almost inevitable. Verjus¹ describes a case; fifteen days after an abortion death occurred in consequence of an abscess of the left tube the size of a chestnut having opened into the peritoneum.

Peritonitis may result from salpingitis in three ways: 1, by the inflammation being propagated from the fimbriated extremity to the peritoneum; 2, by discharge of the tubal pus through the gaping fimbriated extremity; 3, by perforation of the tube.² In addition to the case previously mentioned (527 *note*) I have collected three other examples of perforation of tubal abscess into the peritoneum.

Therefore chronic salpingitis, like chronic ovaritis, exposes women who suffer from it to the constant danger of peritonitis which may break out on the slightest cause, the most insignificant surgical operation on the uterus causing death in twenty-four or thirty-six hours; for this reason the physician before performing any operation on the uterus ought to ascertain that there is no inflammation of the uterus, its appendages, or the pelvic peritoneum.

The treatment of acute salpingitis is the same as that of peritonitis, and that of chronic salpingitis the same as for endometritis and chronic ovaritis.

¹ *Thèses de Paris*, 1844.

² Forster, *Wiener med. Wochenschrift*, 1859, Nos. 44 and 45.

3. *Inflammation of the Fallopian Tube and of the Ovary*

The features most deserving of interest in these cases of salpingitis and ovaritis are the coexistence of the one with the other, or the simultaneous existence of oöphoritis or salpingitis on both sides, or the successive development of inflammation in both organs alternately on either side. This propagation of uterine inflammation to the oviduct and thence to the ovary, sometimes on one side, sometimes on the other, is certainly one of the most singular and characteristic features of these kinds of maladies. It probably depends, on the one hand, on the organic sympathy connecting the various parts of the genital economy, and facilitating the development of these inflammations, so well observed by Gosselin *apropos* of perimetritis. On the other hand, it depends on the influence which a diathetic affection exercises on the development of inflammation successively on the various points of the genital economy and even of other organs. It is characteristic of diathetic affections to prolong their duration till the cause of the malady has been extinguished by treatment, and to provoke manifold simultaneous or successive localisations of the same affection on several organs or several tissues, till this affection has been exhausted or completely neutralised by general treatment.

In syphilis, and even in venereal affections such as leucorrhœa, I have observed the propagation of the malady to the oviduct and to the ovary. In herpetism I have observed the same thing and have seen the most curious cases of successive or alternating localisations on the vagina, uterus, Fallopian tube, ovary and *vice versâ*, on one side or the other, or on both. Rheumatic inflammations do not escape this law. But the most curious fact of all is that, in patients in whom I have been unable to discover any other symptom of a diathetic affection (owing to this organic sympathy connecting the various organs of the genital economy by an invisible link), I have seen inflammation just as it was thought to be extinguished revive in the most unexpected way, and be propagated suddenly to the Fallopian tube on one side and then to the ovary, always taking advantage of the monthly congestion as the best opportunity for these unexpected recurrences; then again, when we had reason to hope that its action was exhausted on the ovary, it revived in the uterus at another monthly period, producing metritis, differing more or less in its form from that which had been treated three or four months ago; at the following periods this metritis was propagated from the uterus to the oviduct of the other side, then at a later period to the ovary of the same side, and only finally exhausted after all parts of the internal genital economy had been attacked by inflammation, sometimes frequently. I have seen several cases of this kind, some more or less incomplete with regard to the various parts of the affected ovaries or oviducts, others more or less complete, all parts of the ovaries and tubes having been affected successively, some even repeatedly, as if the remains of the inflammatory congestion furnished

materials for the revival of the former inflammation, or for the development of a new inflammation.

I remember a patient who came from Algiers to consult me for chronic metritis, from which she had suffered for several years, in whom this propagation occurred; the various parts of the internal genital economy being alternately and successively affected right and left without any apparent cause and lasting for eight months. In such a case it would have been most dangerous to have cauterised the cavity of the body.

In such patients, I have profited by the displacement of the inflammation, to discover the symptoms which pain and tumefaction of tube or ovary determine. The difference between the symptoms of salpingitis and those of ovaritis are easily recognised when we have the opportunity of observing them from month to month, sometimes incompletely developed, sometimes at the summit of their intensity, now on one side, now on the other, now on both simultaneously, alone, or associated with those of pelvic peritonitis, cellulitis, phlegmon of the broad ligaments, &c. Such cases help to dissipate the obscurity which in other circumstances may conceal the real signs on which we have based the diagnosis of salpingitis and ovaritis. It is only after having had the opportunity of observing them and submitting them to rigorous analysis that we have been able to arrange the elements of this diagnosis in descriptions representing the various aspects which these maladies assume.

The diagnosis and treatment of this disease is the same as for peri-uterine inflammation, which it produces easily, as I shall now have occasion to show.

PERI-UTERINE INFLAMMATION

I willingly retain this expression adopted in the previous editions of this work to designate the malady described till lately by surgeons under the name of *pelvic abscess*, which only describes one of its terminations, and by contemporary gynæcologists as *pelvic cellulitis* (Gendrin), *peri-uterine phlegmon*, *peri-uterine engorgement* (Nonat), *inflammation of the annexes*, *phlegmon of the broad ligaments* (Henry Bennet), *perimetritis* (Scanzoni), *pelvic peritonitis* (Burnutz and Goupil), names which recal not only the ideas which these various practitioners had as to the seat of the malady,¹ but also the inflammations which may attack the various tissues and various regions round the uterus. Matthews Duncan² has proposed the name of *perimetritis* for inflammation of the peritoneum surrounding the uterus and *parametritis* for that of the cellular tissue in connection with the uterus. The expression peri-uterine inflammation is more correct because more vague, including all the others without prejudging anything as to the seat of the malady. Now, this seat may vary, the disease attacking one or other of the organs subject to it, or all at once.

¹ In Germany it is described under the name of *peri-öophoritis*, or *perisalpingitis*, according to whether the ovary or tube has been the starting point.

² *A Practical Treatise on Perimetritis and Parametritis*. Edinburgh, 1869.

Seat and pathological anatomy.—I shall describe cellulitis, peritonitis and adenitis. 1. *Peri-uterine cellulitis and pelvic cellulitis.* I do not think pelvic cellulitis can be denied. I shall not content myself with simply stating that I have seen it, and that Nonat thought that all peri-uterine inflammation might be included under the head of peri-uterine phlegmon, but I shall refer to the chief observations which have been made on it recently. Gosselin has described cases of peri-uterine phlegmon. Gallard¹ has devoted his inaugural thesis to the description of this malady. Aran has seen the two peritoneal folds of the broad ligament separated from each other by a thick layer of pus: three times partial engorgements of cellular tissue, diagnosed during life, have been verified after death in two newly-delivered women (infiltration of blood and pus), and in an old woman (fibro-plastic indurations); in another puerperal woman, with internal uterine gangrene, there were found plastic lymph and serosity in the recto- and vesico-vaginal septa and in all the pelvic cellular tissue. Peri-uterine cellulitis is accepted by English surgeons as well as by the German school. Graily Hewitt² summing up the ideas of his countrymen on this point says: inflammation, swelling, and the formation of pus in a large number of cases certainly originate in the connective tissue surrounding the uterus. This tissue becomes the seat of œdema or of infiltration of fluids. West,³ whose remarks on pelvic abscesses are very instructive, agrees with Pirogoff that this state is correctly designated by the expression acute purulent œdema. Virchow⁴ has lately published the results of the investigations he has made on this subject: the cellular tissue, according to him, becomes at first tumefied, thickened, hardened and œdematous, a fluid being discharged from it when it is incised. Although not so frequent as Nonat supposes, peri-uterine cellulitis has been long known.⁵ Numerous cases have been recorded of phlegmons of the broad ligaments, especially in the puerperal state, developed and propagated to a greater or less extent in the surrounding cellular tissue, and even turning into an abscess without causing an attack of peritonitis. I have seen a phlegmon of the right broad ligament open into the rectum, another of the left ligament into the vagina, without having given rise to any symptom of peritonitis; in three patients I have seen indurations and cicatricial bands, causing a lateral and persistent displacement of the uterus, twice to the right, once to the left, with a slight obliquity in

¹ *De l'inflammation du tissu cellulaire qui entoure la matrice, &c.* Paris, 1855.

² *The Diagnosis and Treatment of Diseases of Women*, p. 227. London, 1863.

³ *Op. cit.*, p. 432.

⁴ *Virchow's Archiv*, 1862, Bd. xxiii, S. 415.

⁵ Grisolle, *Des Abscès de la fosse iliaque*, in *Archiv. génér. de médecine*, 1839, and *Pathologie interne*, 8^e édit., 1862, t. i, p. 598.—Marchal de Calvi, *Des Abscès phlegmoneux intra-pelviens*, thèse pour l'agrégation. Paris, 1844.—Béhier, *Clinique médicale*, 1864.—Briand, *Thèse de Paris*, 1866.—Trousseau, *Des Inflammations péri-hystériques*, *Clinique médicale*, t. ii, p. 747. Paris, 2^e édit., 1865.—Frarier, *Études sur le phlegmon des ligaments larges*, *Thèse de Paris*, 1866.—Guichard-Choisity, *Thèse de Paris*, 1862.

two cases, maladies of eight, ten and twelve years' standing in which the co-existence of pelvic peritonitis could not be presumed at any period. The correctness of this diagnosis was confirmed more than once by autopsy.

Frarier describes a case¹ of suppurating plegmon of the right broad ligament after confinement which opened into the bladder: the autopsy proved that the peritoneum and the intestines did not participate in the inflammation. Béhier has published a case² of suppurative phlegmon of the left broad ligament, occurring two days after a first delivery, extending to the left iliac fossa, without alteration of the peritoneum covering it. I have seen an equally conclusive case.

There are also examples of ante-uterine and retro-uterine cellulitis without any symptom of peritonitis, and even without any organic alteration of the serous membrane. Simon³ has published a case of extra-peritoneal, inter-utero-vesical abscess, occurring in the course of malignant variola amidst symptoms of purulent infection. Alph. Guérin⁴ has met with a similar abscess resulting from direct traumatism, from the ablation of a polypus situated in the anterior wall of the cervix. Naudier (*Annales de Gynécologie*, vi, 293) has described an abscess of the retro-uterine cellular tissue in a woman who had hypertrophic elongation of the neck; the abscess, which was evacuated through the anterior wall of the rectum, extended behind the whole of the vagina, the whole posterior surface of the uterus and laterally to the inferior border of the left ovary; pelvic peritonitis had only slowly followed the formation and evacuation of this abscess; the annexes of the uterus and the parts surrounding Douglas's space could not be considered as the starting-point of this retro-uterine cellulitis: the case proves these two points. I have seen an abscess formed between the cervix and the bladder projecting towards the vagina and opening into the bladder, where it discharged pus for a long time, causing attacks of pain from time to time. I have also seen an abscess developed rapidly behind the neck of a prolapsed uterus in a patient who had been imprudent enough to go out the day after leeches had been applied to the cervix; it opened into the rectum on the fourteenth day, was discharged at once and was cured in three weeks. In neither of these cases were there any symptoms of peritonitis.

It is therefore evident, not only that the cellular tissue of the broad ligaments may become inflamed, especially in the puerperal state, without the peritoneum participating in this phlegmasia; but also that inflammation of this tissue which usually extends laterally (internal iliac fossa, cervical arch, abdominal wall) may be propagated towards the centre, round the cervix; and further, that the inflammation may even, in very rare cases, be developed primarily in the cellular tissue loosely connecting the cervix with the peritoneum.

Phlegmon of the broad ligaments (including parametritis) may con-

¹ *Gazette hebdomadaire*, t. ix, p. 82.

² *Clinique médicale*, Obs. 33.

³ *Bulletin de la Société anatomique*, 1858.

⁴ *Bulletin de la Société de chirurgie*, 1866.

sist in a simple gelatinous infiltration of these organs, cellulitis being arrested at the first stage; an induration remains the resolution of which occurs afterwards, gradually diminishing the size; most frequently the inflammation pursues its course, becoming acute, and an abscess is formed; these phenomena rarely occur without pelvic peritonitis being produced simultaneously. Phlebitis is a frequent complication of phlegmon of the broad ligaments. Trousseau¹ has insisted on this point: "Phlegmon of the broad ligament occurs in newly-delivered women after contusion or inflammation of the uterus and its annexes. After suppuration of the placental surface, phlebitis and lymphangitis occur. An incision made on the borders of the uterus at an autopsy reveals small abscesses in the venous tissue. The cellular tissue round these veins is œdematous, and if patients do not succumb to purulent infection on account of adhesive phlebitis below the purulent collection, the intra-venous abscesses will most frequently be the origin of abscesses of the broad ligament. The same remark may be made of suppurative lymphangitis."

According to the same writer phlebitis is the most common cause of phlegmon of the broad ligaments; but it may also be the consequence of it. It may be said that it is primary in puerperal phlegmons, consecutive in non-puerperal. When the autopsy shows circumscribed phlebitis, obstructing clots, pus existing or not in the cellular tissue, phlebitis has been the cause of the phlegmon; when it shows pus in the cellular tissue, traces of phlebitis, absence of clots, purulent infection, phlebitis has been the result of the phlegmon, the inflammation having commenced in the cellular tissue of the organ.

Pelvic cellulitis may be divided like pelvic peritonitis according to whether it extends over the whole pelvis, which it rarely exceeds, or whether it is confined to one region: sometimes round the uterus or along one of its surfaces, or round its cervix; sometimes, on the contrary, as far as possible from the womb, in the iliac fossa; sometimes in the broad ligament, either in all its extent or at its base, or at the summit in its three folds or only in one. Both broad ligaments are seldom inflamed simultaneously. The inflammation is usually limited to one of these organs, *i.e.* to one of the sides of the genital economy.

2. *Peri-uterine peritonitis and pelvic peritonitis.*—Autopsies have proved that more or less extensive inflammation of the peritoneum not only frequently complicates the inflammatory tumours of which I have just spoken, but also in great part constitutes inflammatory peri-uterine tumours; this inflammation may be simply sero-adhesive or may become sero-purulent; whatever the termination may be, it is complicated by numerous adhesions uniting together the various surfaces of the peritoneal covering of the pelvic organs, *e.g.* the annexes to each other or to the uterus, or to the neighbouring organs, contained also in the pelvis, the intestinal circumvolutions, the rectum, bladder, &c.: the more adhesions there are the larger the tumour appears. It

is to Bernutz¹ that we owe the elucidation of this important point in uterine pathology. He has proved by three autopsies that the inflammatory tumour which, during life, had presented characteristic signs of peri-uterine phlegmons, was not situated in the pelvic cellular tissue, but that it was constituted by peritoneal adhesions uniting the viscera of the pelvis together.

Bernutz and Goupil² have not been content with proving the existence of pelvic peritonitis, but have denied that of peri-uterine phlegmons, having always seen partial peritoneal inflammations in peri-uterine inflammatory tumours. Moreover, they have also seen in this pelvic peritonitis, a phlegmasia of the peritoneum by propagation, having as starting-point an inflammation of the internal genital organs of woman, just as we see inflammation of the testicle in man produce that of the serous membrane covering it. Only, if there is an analogy in the morbid process which takes place, there is none in the consequences; the transmission of the inflammation existing in the uterus to the neighbouring peritoneum provokes a plastic exudation which not only determines numerous sympathies by its extent, but also gives rise to the production of adhesions connecting the uterus with neighbouring organs and more or less compromising its functions. In this way tumours are developed perceptible to vaginal touch or hypogastric palpation, formed partly of fibrinous exudations, and partly of agglomerated viscera. Lastly, according to the same writers this inflammation of the pelvic peritoneum which is always symptomatic, arises more frequently from inflammation of the ovaries and tubes than of the uterus. But the chief symptoms of these peri-uterine affections belong to pelvic peritonitis, whilst the uterine or tubo-ovarian affection, although the most important, being the cause of the development of inflammation of the pelvic serous membrane, is only indicated by obscure symptoms, at least in the present state of our knowledge. Pelvic peritonitis, however, does not merely dominate symptomatology, so as to allow peri-uterine inflammation to be distinguished from isolated inflammation of the ovary or tube, but it dominates therapeutics, being really the source of the chief indications. It is what seems to me to constitute the most important practical consequence and therefore the chief interest of the valuable investigations of Bernutz and Goupil.

Aran³ went further than Bernutz and Goupil in reference to the subordinate place he gave to pelvic peritonitis beside ovaritis and salpingitis. He considers partial peritonitis only secondary. The true element of peri-uterine inflammation is alteration of the uterine appendages, ovary and tube, constituting an inflammatory centre, small in proportion to the tumour formed round this focus by the pelvic organs including the intestines adhering together. It is probably always from the ovary or tube that the inflammation first arises.

¹ *Archiv. génér. de médecine*, 1857.

² *Clinique médicale sur les maladies des femmes*, t. ii, premier mémoire : *De la pelvi-péritonite et de ses diverses variétés*. Paris, 1862.

³ *Op. cit.*, p. 667.

After acute *pelvic peritonitis*, especially when this is puerperal, in addition to the characteristic alterations of ordinary peritonitis we find in the pelvic cavity, below the intestinal circumvolutions which adhere loosely together and to the neighbouring organs, a globular *tumour* as large as a hen's egg, attached to the uterus, from which it may or may not be separated by a groove, sometimes confounded with this organ, which it is difficult to recognise. The displaced uterus is drawn towards and attached to the tumour or pushed back in a contrary direction, according to the seat of the tumour. This tumour is formed of thick false membranes hollowed out here and there into cavities, containing a citrine, purulent serosity or pus; above them, the inflamed peritoneum is seen and a serous infiltration of the sub-peritoneal cellular tissue; in the centre of the tumour we find the ovary and tube inflamed, as well as the broad ligament, the peritoneum of which is injected and the cellular tissue infiltrated with sanguinolent serosity and pus. The ovary and tube being prolapsed, the tumour often rests on the pelvic floor. The purulent collections contained in the cavities with tomentous walls which are formed by adhesions, have frequently been mistaken for infiltrations of the cellular tissue of the pelvis. Suppuration of the pelvic cellular tissue, however, is quite exceptional. When the annexes are inflamed on both sides the tumour

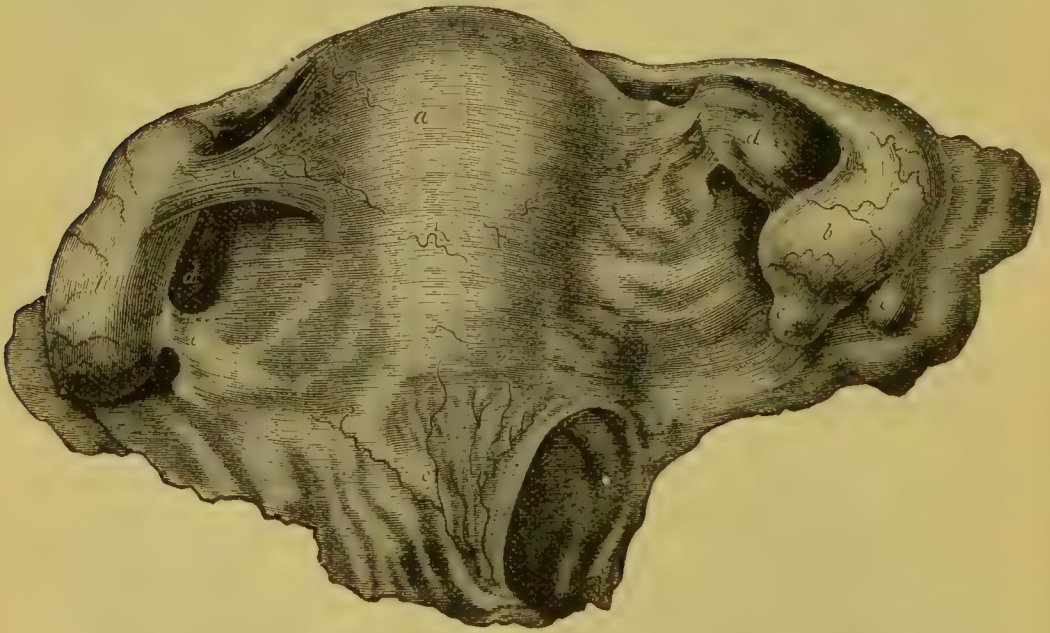


FIG. 317.—Retro-uterine and tubal tumours held back by false membranes to the ovaries, uterus and adjacent tissues, the result of peri-uterine inflammation (after Hooper). Compare this woodcut with Fig. 1, representing the general view of the same organs in their normal condition.

is enormous and surrounds the uterus in a kind of ring. In the chronic state, the false membranes in place of being soft, whitish or yellowish, have become thick, resistant, grey or black, forming short bands extending from the annexes and from the uterus to the neighbouring organs, which they unite together enclosing spaces which are

empty, or which contain citrine serosity or pus. The uterus more or less inclined, deviated or flexed, tumefied, but seldom atrophied, is sometimes affected with internal inflammation. The alterations of the annexes are fully developed: the tubes contain pus or a more or less considerable quantity of serosity which may give rise to the degeneration incorrectly called tubal dropsy; the ovaries, which are seldom atrophied, usually form purulent sacs, the envelope of which resists laceration or rupture for a long time. The abscesses which, after pelvic peritonitis, open into the peritoneum, rectum, vagina, bladder or externally, are generally abscesses of the ovary or tube, less frequently peritoneal purulent collections encysted by the adhesions of false membranes. These latter are discharged usually at the commencement, the false membranes being then imperfectly organised, and as a rule are emptied into the peritoneal cavity by laceration or fissure. The former are evacuated by the rectum or vagina, from the effect of ulceration, after previous adhesion of the two cavities, between which a communication is set up, that of the abscess on the one hand and of the rectum or vagina on the other. The opening becomes a fistula, establishing a permanent communication between these cavities, and even allowing stercoraceous matter to pass from the rectum into the cavity of the abscess. In this way pelvic peritonitis or perimetritis may pass through the various stages of adhesive, sero-adhesive, sero-encysted, purulent peri-metritis, and even of hæmorrhagiparous pachy-peritonitis (*see* p. 545).

Lastly, although it may be limited to one side, the side of the diseased ovary, the starting-point of the inflammation of the serous membrane, peritonitis is often propagated to the other side, and seldom is limited to the side first attacked; usually it spreads round the uterus surrounding all the internal genital economy.

3. *Peri-uterine Adenitis and Angioleucitis*.—Peri-uterine cellulitis and pelvic peritonitis, with all their varieties, are the only maladies included by gynæcologists under the common name of peri-uterine inflammation. For several years I have taught in my lectures that a third inflammatory malady exists, which ought to be included in the peri-uterine inflammations; it is adenitis and peri-uterine angioleucitis, which is often acute and the prognosis of which is very serious when it is puerperal; more frequently it is chronic and is then less important in itself than from the ulceration of the uterine mucous membrane of which it is the certain sign.

In fatal puerperal inflammation pus is not found in the veins. Although, however, inflammation of the veins is exceptional even in puerperal affections, that of the lymphatics is common, as was proved by the autopsies made by Championnière, Leopold and others. In puerperal metritis, inflammation may attack the lymphatics more violently, so that after death the latter may be found filled with pus, not only below the mucous and serous membranes of the uterus and in the thickness of the organ, but also in some points corresponding especially with the posterior region of the uterus and near its cervix, where,

according to Championnière, may be found ganglia gorged with pus and clusters of lymphatic vessels distended with this fluid, which may be mistaken for suppurated ganglia, not only on the dead body, but even during life, causing errors of diagnosis.

In other circumstances, and in the non-puerperal state, adenitis and angioleucitis may present themselves in the acute form in the same organs, the inflammation either being developed under the influence of traumatic causes and especially of acute metritis or ovaritis, or it may have originated from acute peri-uterine inflammation, in the participation of which the ganglia and lymphatic vessels do not escape, and in which the adenitis and angioleucitis developed in such conditions survive for a longer or shorter time, varying in intensity and duration.

In other circumstances again and more frequently, angioleucitis and adenitis especially occur in the chronic form and are all the more interesting to describe, as they appear to have almost escaped observation till now. After having made a careful vaginal examination, especially posteriorly and laterally, as well as at the base of the broad ligaments, I have often found behind and to the sides of the uterus, usually to the right, sometimes at one point only, small rounded tumours, a little indented, smooth at certain points, irregular at others, the form, hardness, mobility and sensitiveness of which contrast strikingly with the characters of softness, insensibility, &c., of the surrounding tissues. These small tumours of various sizes are less voluminous even than the ovaries, even when the latter are not enlarged by inflammation, and are usually less painful than these organs, though sometimes, on the contrary, they are excessively so, less mobile also, and appear to be connected loosely with the uterus, the vaginal *cul-de-sac*, and especially with the innermost layer extending above them.

I could not have interpreted the tumours just described otherwise than as remnants of inflammatory indurations or as adenitis and angioleucitis, *i.e.* tumours formed by clusters of vessels, or lymphatic ganglia tumefied and rendered painful by inflammation, even if an autopsy had not allowed me on one occasion to verify my suppositions in a woman of forty, who I knew had suffered for long from leucorrhœa and ulcerous endometritis, and who was carried off by pleuropneumonia, in whom I found adenitis and its usual cause (chronic ulceration of the mucous membrane); autopsies also on newly delivered women who had succumbed to puerperal disease and in whom suppurative adenitis was found occupying the same regions, in like manner justified my opinion. In presence of such symptomatic and microscopic proof, hesitation is no longer possible. I observed this retro-uterine adenitis in patients who had for long suffered from some affection of the internal genital organs, vaginal and uterine leucorrhœa, or from long existing ulceration of the cervix which still existed on the mucous membrane of the cavities. These patients came to consult me because they had been treated for a long time by their own doctors, who now assured them that they were cured; and

they were cured except in the uterine cavities: the sound, the passage of which was often painful, brought back pus or leucorrhœa, sometimes a little blood, which made me suspect a suppurating ulcer situated on the mucous membrane of the cervix or body, another example of the services rendered by the sound. I have usually regarded this chronic adenitis as well as cervical and other forms of adenitis as symptomatic of inflammatory suppurative action on one of the mucous membranes where the afferent vessels of the tumefied ganglia had their absorbent network. From this point of view, the verification of retro- or latero-uterine adenitis is interesting even if only as a symptom of a chronic suppurative phlegmasia the seat of which is easily determined. It is also interesting in itself; for it constitutes a malady, the intensity, extent, and progressive tendency of which requires great attention.

Apart from the symptoms, either direct or sympathetic of the uterine malady, and of the ulcer which has caused it, peri-uterine adenitis has special symptoms characterising it: lumbar or lumbosacral pain, sometimes extending to the anus; continuance of the pains previously experienced by the patient which are increased by marital intercourse even when most of the apparent uterine symptoms have disappeared; pain elicited by digital touch, especially when pressure is exercised by the finger behind the uterus and laterally, and when an attempt is made to depress the retro- or dextro-uterine *cul-de-sac*.

Course.—Like all phlegmasias, peri-uterine inflammation may be *acute* or *chronic*. The term *super-acute* has been added to designate acuity of the highest degree, and that of *sub-acute* to mark a kind of transition between the acute and the chronic forms. I do not think it necessary to multiply divisions; but I maintain the marked difference, with regard to causes, symptoms and treatment between the acute and chronic forms.

It has also been proposed to distinguish *puerperal* from *non-puerperal* peri-uterine inflammation. Marchal de Calvi¹ and H. Bennet² attach importance to this distinction. The latter says, that the puerperal state, which may be said to extend to the fourth, fifth, or even sixth week after delivery, is one of the most dangerous conditions. So long as it lasts all inflammatory affections present a special gravity and especially those of the organs which, directly or indirectly, have participated in parturition. If inflammation occurs in the ovaries or broad ligaments immediately after delivery, it is frequently as a complication of metro-peritonitis and as merely an after symptom of this formidable affection. A number of writers on puerperal fever have noticed the frequency of suppuration of the ovaries and broad ligaments in cases of metro-peritonitis terminating in death. But even when the broad ligaments are inflamed several weeks after delivery, the general symptoms are more intense, the local tumefaction more considerable, and the inflam-

¹ *Annales de la chirurgie fr. et étr.*, July and August, 1844.

² *Op. cit.*, p. 39.

mation presents a greater tendency to extend to the adjacent tissues than in the non-puerperal form of the affection. It is also much more difficult to arrest its progress; the inflammatory and suppurative action continues to extend long after the first collection is evacuated, and in a number of cases it gives rise to adhesions and abdominal perforations. This serious form is quite exceptional in the non-puerperal state, whilst in the puerperal it is so common that till now it has been considered as the only one under which the affection is manifested.

I share Bennet's opinion, but do not see why the two forms should be described separately. Peri-uterine inflammation may arise in the puerperal state as in any other; it is certainly produced oftener in the former state; it is then more serious and has a more rapid course, terminating often in suppuration. But its coincidence or its relations with the puerperal state do not change its character; it passes frequently from the puerperal or post puerperal to the chronic form, and there may be great uncertainty as to its real origin: lastly, it is diagnosed in the same way, and the indications offer differences of degree rather than of nature.

Frequency.—Peri uterine inflammation is very common: indeed it forms about one third of uterine diseases. It is very difficult to make an exact calculation, because peri-uterine inflammation in place of occurring alone may complicate the majority of uterine diseases. Aran thought that with inflammation of the uterus (parenchymatous and mucous) it forms two thirds of uterine diseases. It is certain that out of 100 women there will be 55 with peritoneal adhesions and showing traces more or less intense of pelvic peritonitis. Of this number there are far more married women than virgins and more multiparæ than primiparæ.

Etiology.—Menstrual disorders and their causes physical and moral, long-continued excitement of the genital organs, pregnancy, labour, extension of inflammation of the uterus or its annexes to the neighbouring parts. It will be seen that the causes are almost the same for metritis, perimetritis, ovaritis, &c.; it is the predisposition which varies and determines the localisation. But this etiology may acquire some interest from a little more precision. Now we know from observation and statistics that peri-uterine inflammation is common especially from 20 to 30, which is not surprising, seeing that ovarian and tubal inflammation are also common at this age and are usually the starting-points of pelvic peritonitis. Another interesting result is that about two thirds of these diseases are the consequences of labour, abortion, and consecutive inflammation: West thinks that labour, abortion and consecutive inflammation enter into the etiology of peri-uterine inflammations at the ratio of 77 per cent.; Gallard and Bernutz reduce this influence to 45 or 44 per cent., which gives an average of 60 per cent. between the two extremes, which is very nearly the proportion of the number of cases (55 per cent.) in which Aran found peritoneal adhesions and traces of pelvic peritonitis. This cause of peri-uterine inflammation may sometimes be ignored because symptoms are

not always developed immediately after delivery, sometimes only appearing much later; but in taking care to trace the morbid manifestations to their source we discover the frequency and importance of this cause. It is probable that the operations necessitated by difficult labour and the imprudence often committed by newly-delivered women in resuming marital intercourse and their ordinary work too soon have a considerable share in the development of perimetritis. Often, however, these are not the causes of the malady. Churchill¹ has given a good description of the various ways in which peri-uterine inflammation may commence. I agree with Aran that very often there is either a latent morbid state or a morbid predisposition existing before delivery, labour being only the determining cause.

Menstrual disorders which may be placed in the second rank as causes, in the proportion of 20 per cent. according to Bernutz and Goupil, in that of 9 or 10 per cent. according to Aran, are frequently only symptoms of uterine inflammation already existing, of a previous latent morbid action, which has necessarily caused either dysmenorrhœa or menorrhagia.

The same remark is applicable to leucorrhœa and blenorrhagia which may also become causes of pelvic peritonitis, especially in women who have had diseases of the annexes, mechanical influences having their share also. Bernutz attributes a great deal to blenorrhagia after the third week and more as the monthly period approaches, in the proportion indeed of 29 per cent., whilst West and Aran reduce this proportion to 1 or 2 per cent., and I think certainly that it has been exaggerated by Bernutz.

The neighbouring inflammations, those of the rectum or intestines, dysentery, metritis especially, the persistence of ovaritis and salpingitis cause the development of perimetritis and determine its chronicity. Mechanical influences (cauterisation, the use of the sound, pessaries, injections) have not apparently a greater share than 1 per cent. in the etiology of peri-uterine inflammation.

Diagnosis—subjective signs.—The symptoms of peri-uterine inflammation greatly resemble those of ovaritis and salpingitis, but there is one dominating element which for the time effaces all the others: peritonitis or pelvic peritonitis.

Acute peri-uterine inflammation breaks out suddenly, after abortion or delivery, by shivering, heat, perspiration, nausea, vomiting, or the appearance of fits of intermittent fever which might be mistaken for ague; or it may be preceded for days, weeks or even months, by vague discomfort, symptomatic of inflammation of the appendages, such as loss of appetite, diarrhœa, constipation, vague and dull pains. Then comes the pain characteristic of perimetritis, sometimes limited to one point of an iliac fossa, generally more diffuse, occupying a portion of the belly, very acute if not spontaneous on pressure near the Fallopian ligament. In addition to pain there is great heat, swelling, tension of the lower half of the abdomen, the muscles of which contract as if to shelter the organs underneath, dorsal decubitus, alteration of

¹ *Dublin Journal of Medicine*, xxiv, 1844.

the features, small concentrated pulse, bilious vomiting in some cases, just as in simple peritonitis. When these symptoms are alleviated there remains a feeling of fulness, discomfort, pain in the hypogastrium, especially on one side, exacerbations of pain, slight fever, increased in the evening, anorexia, &c. The description of the symptoms of pelvic abscesses following delivery which may be regarded as typical is generally characteristic: rigors, more or less intense pain, quick pulse and acute fever mark the commencement of inflammation. But these initial symptoms may be absent, the patient becoming gradually ill without the appearance of acute symptoms of any kind. It is not uncommon to see a woman who was in good health at the time of her confinement experience symptoms of general indisposition three or four weeks afterwards, become gradually weaker and thinner, and complain of pain down the legs or in the pelvis, lose her appetite and power of digestion and occasionally have shivering fits; after these symptoms have lasted for a week or two the pelvic symptoms become more marked, such as difficult and painful defæcation and micturition, pain and discomfort in the pelvis, &c. This pain is increased by the slightest movement, and yet the real cause being misunderstood, it is often attributed to weakness. The presence, however, of a pelvic tumour soon discovers to the physician the cause of all these symptoms.

Chronic peri-uterine inflammation may either be the termination of acute inflammation or it may be chronic from the beginning, which leads to many errors of diagnosis. A subacute condition may exist, an intermediate form, presenting the same phenomena as the acute but less intense, and producing hectic fever in delicate patients. This form is not uncommon after delivery; the patient rises, but she is weak and complains of pain, indigestion, &c.; there is slight feverishness and the secretion of milk is irregular. In others who are stronger the inflammation only shows itself later, but it originates from labour. This uncertainty as to the origin of chronic perimetritis seems to me a reason for rejecting the distinction of the puerperal and non-puerperal varieties. When chronic inflammation is developed all at once, which is rare, the commencement is insidious. It only attracts attention when the tumour has become large, or when the pains become acute and when functional and digestive disorders occur, which happens especially during menstruation. In fact, chronic peri-uterine inflammation presents few marked local signs, especially if there is any intercurrent malady such as tuberculisation. General symptoms occupy the first place. These are: weariness, paleness, emaciation, sallow face, eyes without expression, dry sometimes hot skin, weak, small, compressed pulse, frequently oppression, palpitation, headache, neuralgia, hysteria, numbness of one side especially of the left, tingling of the extremities, increased or diminished sensibility, painful points along the spine, dyspepsia, acidity, epigastric swelling, occasionally vomiting.

On interrogating patients we generally find that there have been acute symptoms of some kind to begin with. Since then in spite of

the comparative calm, a feeling of weight and discomfort has remained in the pelvis, with internal heat and pulsation increased by walking, fatigue or coitus. Menstruation is suppressed or less abundant (metrorrhagia being the exception); at the monthly periods the pains are more acute in the abdomen, there is tumefaction of the belly, nausea, vomiting, heat of the skin, shivering, increased leucorrhœa, vulval irritation and desquamation, loaded urine, painful defecation, excretion of mucus by the anus or diarrhœa. Order is re-established till a new crisis; but there is still weariness, continuance of lumbar and hypogastric pain radiating in one or both limbs to the knee or even to the foot; leucorrhœa; constipation or diarrhœa; vulval itching. On resuming work or coitus, or at the monthly periods, there are exacerbations as in ovaritis, characterised by the *redoublements inflammatoires* of Gosselin, and causing a symptomatic manifestation analogous to that of the acute period, with the exception of the general symptoms, which are less marked. These exacerbations last from three to eight days; they may be repeated every month or at intervals of three months, six months or a year. They aggravate the position of patients but rarely cause death. We must remember that the chronicity and inflammatory attacks depend not only on the imprudence of patients and on insufficient care, but chiefly on the persistence of inflammation of the ovary and Fallopian tube. At every fresh attack peritonitis appears; in the end, however, it organises a boundary of false membranes which it does not cross. This boundary is on the level of the brim, iliac fossæ, or iliac crests (p. 553, fig. 323): inflammation of the serous membrane never passes beyond the level of the umbilicus. Percussion reveals its exact limits: all the inflamed part gives a dull sound, while the portion which escapes peritonitis gives a tympanitic sound.

Pain during the development of acute pelvic peritonitis or an exacerbation of the chronic form tends to become generalised whilst preserving a maximum of intensity in its original seat as in ordinary peritonitis. It is acute, darting, incessant and pulsating with exacerbations every three or four hours, especially when there is internal metritis, leucorrhœa, &c., and with tension of the belly which cannot bear any pressure. It is also felt in the vagina and rectum preventing the introduction of the finger. In chronic peri-uterine inflammation this pain is often confounded with that of ovaritis, metritis and even with the leucorrhœa which co-exists with it. Like the disease it has various seats: generally occupying one side of the belly, especially the left, or a large part of the hypogastrium with a maximum of intensity at the point corresponding to the tumour; it radiates towards the kidneys, loins, pelvis, vulva, thighs and legs, especially on the affected side; it is fixed, deep, pulsating, aggravated by walking, fatigue, standing, or coitus; sometimes it is acute and darting, at the same time becoming mobile, wandering, intermittent, in which case it is probably due to neuralgia; it is sometimes hardly apparent unless elicited artificially by touch, abdominal pressure, a fall, coughing, vomiting, constipation, efforts during micturition or defecation, walk-

ing, the presence of a foreign body in the vagina, the heat of the bed, uterine congestion, the menstrual period. Sometimes even lying down increases it, so that patients instinctively adopt the decubitus which is least painful to them; this is generally the dorsal with slight inclination to the opposite side from the tumour. The heat felt by patients in acute perimetritis is considerable; it is at the bottom of the pelvis, becoming sometimes burning in the vagina. In chronic perimetritis it is hardly observed except at the time of an inflammatory paroxysm. The symptoms of neighbourhood are variable; there is constipation, discomfort and pain on going to stool with vesical tenesmus. Nonat says that in acute perimetritis menstruation is usually increased: this is not my experience, nor have I often remarked leucorrhœa as a result of inflammatory reaction on the uterine mucous membrane. What is more frequently observed is suppression of the lochiæ in the puerperal state and the extension of the inflammation to the uterine parenchyma.

In chronic inflammation the anatomical and functional disorders of neighbourhood and the general symptoms take quite a different character: the neighbouring organs are displaced, their relationships altered; the uterus especially is pushed back, deviated or flexed; there is compression of the bladder, rectum, pelvic vessels and nerves; there is a permanent state of congestion round the phlegmon or pelvic peritonitis, especially in the uterus, which is hyperæmiated, and the chronic congestion of which often accompanies peri-uterine inflammation; hence pain, leucorrhœa, menstrual disorders, the period being usually advanced and prolonged, though the quantity is rarely increased, but there is often gradual diminution or suppression; disordered menstruation reacts on the perimetritis itself, causing increase of pain; sometimes persistence of the peri-uterine inflammation produces hypertrophy of the uterus, especially in multiparæ. Marital intercourse is nearly always painful, and should be forbidden. It is less so when the inflammation is in the broad ligaments, and not immediately in contact with the uterus. Chronic peri-uterine inflammation is not an absolute obstacle to conception unless there are abnormal adhesions of the Fallopian tubes; but in the few cases in which pregnancy occurs there is undoubtedly a risk of miscarriage from mechanical and physiological causes, therefore treatment should be continued during pregnancy. Micturition is frequent and painful, accompanied by tenesmus and sometimes by retention. There is often constipation, at other times diarrhœa by propagation of the inflammation. At other times defecation is painful and difficult, the rectum and anus being the seat of spasmodic contractions causing real nervous attacks; the fæces are discharged as if moulded in a tube no larger than a pen, and are covered with mucus, showing the existence of glairy enteritis; there are hæmorrhoids and even anal fissures. The stomach is affected sympathetically as in metritis and leucorrhœa; there is usually loss of appetite, slow digestion, weight with epigastric swelling after meals, depraved taste, heat, epigastric dragging, gaseous eructations, nausea, vomiting, &c. Respiration is often difficult, and

accompanied by a dry nervous cough. Fever appears with every paroxysm; in many patients the pulse is moderately but continuously quick, or there may be a recurrence of this frequency in the evening after fatigue. In some women disorders of sensibility and motility are added to these general symptoms. Lastly, chloro-anæmia and debility are usually the most marked general symptoms.

The *course* of the malady may help in the diagnosis.

Puerperal peri-uterine inflammation passes rapidly and frequently to suppuration. Non-puerperal perimetritis has a slower course. It may terminate in three ways: by resolution after gradual diminution of the symptoms in two or three weeks or at the normal recurrence of the second monthly period; by transition to the chronic stage, in which case the tumour remains stationary and becomes indurated; or by suppuration, which is the rarest case. The malady progresses very slowly except in a few cases, when it terminates by sudden generalisation of the peritonitis. Even in the most fortunate cases patients suffer a long time from debility and nervous symptoms, pelvic weight, lumbar pain on standing, and pain in the accomplishment of the sexual functions. The abdomen is painful on pressure; traces of the tumour exist, either peri-uterine puffiness, or small tumours of the size of a pea, so well described by Gosselin, tumours which are not perhaps always vestiges of peri-uterine inflammation, but which may often pass for a remnant of this malady; so that resolution of the peri-uterine inflammation perhaps is never complete—at least it is very slow. Usually the malady passes to the chronic state with or without inflammatory paroxysms. Death may occur in one of these paroxysms by generalisation of the peritonitis, putrid absorption, or even by purulent infection (Aran has seen it twice).

At other times the neo-membranous peritonitis favoured by these inflammatory paroxysms may be vascularised and hyperæmiated to the point of causing hæmorrhages, which again are the sources of new maladies (hematocèles), and which have won the name of hæmorrhagiparous pachy-peritonitis. At other times, after having passed through several paroxysms and escaped their dangers, patients find their health gradually improved. If, however, they are tuberculous they continue to suffer, now from the chest, now from pelvic peritonitis, till consumption at last ends in death.

Objective signs.—At first it is difficult to perceive the pelvic tumour by abdominal palpation. But when the tumour increases and approaches the surface we discover in the centre of the hard abdomen a tumour, which may or may not be circumscribed, as large as the fist and more painful than the surrounding parts on pressure. In chronic peri-uterine inflammation the belly is always sensitive to pressure and sometimes distended; palpation reveals marked resistance or a real tumour, flattened or rounded, which may reach to the umbilicus, or farther.

Digital touch is not possible in the commencement of acute perimetritis, the vagino-uterine pain being too great to allow of it; but as

soon as the pain is somewhat less intense this examination is indispensable in order to prevent the consequences of the phlegmon.

It is usually easy to discover a globular projection with smooth, regular, resisting surface, hot, painful, and projecting into the vagina, rectum or hypogastrium. There is marked vaginal heat, the vulvo-uterine canal being more or less moistened with mucus. The cervix varies in position, but appears *fixed on a solid base*; the fundus is immobile; the utero-vaginal *cul-de-sac* offers at some points a certain *resistance*, puffiness or a projection, sometimes in the form of a semi-



FIG. 318.—Phlegmon of the broad ligament, partially surrounding the cervix (after Barnes).

circle (Fig. 318). Immobility of the uterus and an imperfectly circumscribed peri-uterine tumour, together with the general phenomena suffice to diagnose the malady.

In chronic inflammation digital touch shows the uterus to be completely *immobile*, either in its normal position or inclined, or in a kind of *gangue* from which the neck alone is free, or *closely attached* to a lateral or posterior tumour, or pushed back in an opposite direction from the tumour, from which the cervix is separated by a groove, sometimes with œdema of the neck and upper part of the vagina. Rectal touch enables us better to recognise a shapeless mass, or bands, or a more or less complete ring fixing the uterus. Lastly, the association of palpation with digital touch allows the extent of the tumour to be appreciated, its thickness, its consistency, its elasticity announcing the formation of pus, &c. The association of vaginal and rectal touch has been successfully employed by Récamier to discover supuration, by determining fluctuation in the tumour. As for the ovary and Fallopian tube, they are too much in the centre of this tumour to be accessible to touch.

Peri-uterine inflammation always leads to the formation of a tumour. This tumour is sometimes apparent above the pubis, through the abdominal walls; its presence can be verified by manual examination, hypogastric palpation, association of vaginal with rectal touch. It may vary much in form and volume, from the size of an

almond to that of an orange, and may be either circumscribed or diffuse. The surface is generally regular and smooth, without soft depressible projections like those produced by stercoraceous accumulations in the rectum; in consistency it is solid, firm, sometimes hard, generally elastic, like that of the body of the uterus unless there is suppuration. This tumour is sometimes mobile relatively to the uterus, sometimes adherent to this organ, either by one end, or by one surface; it is not on that account necessarily immobile in the pelvis, it may be limited to the folds of the broad ligaments to which it adheres by one surface, whilst the other is free; in fact it is usually fixed and immobile in the pelvis and round the uterus or at one part of this organ.

Digital touch shows the parts occupied by the tumour. Nonat says that *phlegmon* usually begins with one of the broad ligaments and from there spreads inwards towards the uterus or outwards towards the iliac fossæ. This writer distinguishes besides this phlegmon of the broad ligaments, latero-uterine phlegmon (the most frequent after the preceding), then antero-uterine, retro-uterine, and lastly, that which makes a belt round the womb meriting the name of peri-uterine, and perhaps the peri-rectal.

West's statistics give us an idea of the comparative frequency with which the different parts are affected: out of 52 cases the broad ligament was the seat 34 times, the utero-rectal cellular tissue 14 times, the utero-vesical cellular tissue 3 times.

Pelvic peritonitis is also more common laterally than in the median portion, the ovary or Fallopian tube being the usual starting point. As to frequency, peri-uterine inflammation evidently has a tendency to attack the postero-lateral part to the right or left indifferently, except in puerperal women when, Aran says, the proportion seems rather larger to the right.

The statistics of Gallard and Aran confirm those of West in this respect.

In 52 cases, West found 34 on one side, 21 to the left.							
„ 53	„	Gallard	„ 32	„	„	11	„
„ 24	„	Aran	„ 17	„	„		

Next to the lateral, the posterior part or the utero-rectal *cul-de-sac* is the most frequent seat of peri-uterine inflammation. Peri-uterine *adenitis* is also more frequent behind and on one side, usually on the right.

There is another sign perceptible by digital touch to which Nonat attributes great importance: usually, he says, a tolerably large arterial vessel, as large for instance as the radial, creeps round the base of the tumour giving pulsations perceptible to the touch. It is only to be found in old tumours; it can be observed in the third month but more clearly in the eighth; it is never absent from peri-uterine engorgements of a year's standing, but it may not be accessible to exploration. Its volume is proportioned to the age of the phlegmon, it aggravates the prognosis, the afflux of a larger quantity of blood making the malady more difficult to treat. These remarks of Nonat's

are mentioned in Martin's¹ thesis. Arterial pulsations may be perceived in peri-uterine tumours; but I think this writer exaggerates their importance.

Differential diagnosis.—Acute but especially chronic peri-uterine inflammations have been long ignored; they have given rise to many errors of diagnosis; we may even affirm that such errors continue to be made. We must therefore lay down the basis for a serious diagnosis. Every unusual phenomenon produced in the abdominal region, especially when accompanied by disturbance of the general health, whether it occur after labour or not, ought to attract the attention of the physician leading him to fear peri-uterine inflammation (for this malady occurs 50 or 70 times out of 100 diseases of the utero-ovarian economy), and induce him to make a minute examination, especially after delivery or abortion, even when this has taken place two months ago (for the disease may have been misunderstood till then); or even if there was another malady (for perimetritis may coexist with it).

1. *Special signs of the various peri-uterine inflammations.*—They establish a distinction between *perimetritis*, *parametritis*, *phlegmon of the broad ligaments*, *peri-uterine adenitis*.

Although Thomas,² Bernutz,³ and other writers have tried to enumerate these signs, it is very difficult to find sufficient reasons for deciding whether we have to do with a case of perimetritis, parametritis, or phlegmon of the broad ligaments, whether it be that they coexist, or that the distinctive signs are not sufficiently pathognomonic. It is not often that a physician can be sure as to the seat of inflammation, except when he has been called in at the beginning and has seen the malady follow its course, terminating by resolution or suppuration, the abscess having opened at some point or another. There are also cases when we have to do simultaneously with peritonitis and pelvic cellulitis. As, however, these diseases may be absolutely independent of each other, each existing separately, I shall endeavour to give the differential diagnosis of peritonitis and simple pelvic cellulitis, after having described the complicated morbid states which most frequently occur under these names, just as I have before endeavoured to bring into relief the characters of simple ovaritis amidst symptoms of complicated ovaritis which is also commoner.

Peri-uterine cellulitis or pelvic cellulitis, especially when situated on a level with the cervix, is so rare that its existence has been denied; it has, however, been seen after traumatism and extension of inflammation of the broad ligaments: it is a median parametritis, whilst phlegmon of the broad ligament is a lateral parametritis; it has no direct connection with puerperal fever. There is little or no shivering except at the time of suppuration; dull pain from the abscess, and feverish pulse. The tumour may be felt all round the cervix project-

¹ *Phlegmons des ligaments larges et du tissu cellulaire péri-utérin*. Paris, 1851.

² *Diseases of Women*, pp. 366, 375.

³ *Op. cit.*, t. ii, p. 397, et seq.

ing either in front between the bladder and uterus raising the vagina, or behind between the retro-uterine peritoneum and the womb raising



FIG. 319.—Pelvic cellulitis and pelvic abscess encysted to the right of the uterus, seen from the front, from a case observed at University College Hospital (after Graily Hewitt).

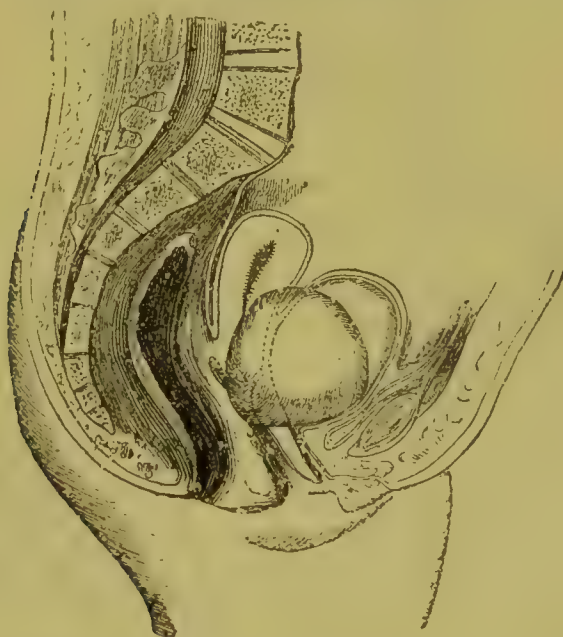


FIG. 320.—Right pelvic cellulitis, same tumour seen in profile.

the posterior vaginal *cul-de-sac*, or laterally whence it extends to the broad ligament, forming a hard surface on the side corresponding to the vagina; more frequently it is from the broad ligament that the inflammation extends to the circumference of the cervix; it is slowly developed, not being perceived for some days; it is very circumscribed hardly rising except when it attacks the broad ligament; it cannot be perceived above the brim; it is hemispherical and annular, sometimes very hard in the centre, and œdematous externally; the œdema may extend to the cervix on one side and to the vulva on the other; later

on it becomes puffy and fluctuation appears; the tumour is immobile. The uterus is not completely immobile, only its mobility is limited in one direction or another according to the seat of the phlegmon; it is the same as to its direction, which may also be altered. The groove of separation between the uterus and the tumour may not exist or is inappreciable. The pain, which varies with the stage of the disease, is elicited by micturition or defecation according to the seat of the trouble; dysuria is not uncommon; pain is also caused by the pressure of the finger in the vagina. There are no signs of peritonitis; fever is

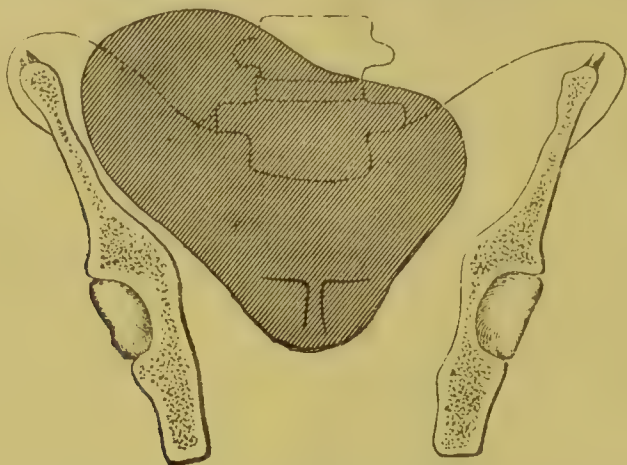


FIG. 321.—Pelvic cellulitis or right pelvic phlegmon, which has spread from the broad ligament, on one side round the uterus, on the other side into the iliac fossa. Parnell's case, preserved in University College Hospital, front view (after Graily Hewitt).

sometimes high; there is no tendency to relapses; duration is limited; there is marked tendency to suppuration; termination is by resolution, suppuration or induration, which in all cases diminishes the size of the tumour causing its disappearance, unless some centres of induration persist in its place. Sometimes, on the contrary, the phlegmasia extends towards the periphery of the pelvic cellular tissue, towards the pubic or obturator region, towards one of the iliac fossæ, all round the rectum. But the favourite seat of cellulitis is the broad ligament, *i. e.* the point where the connective tissue is contained between the two folds of peritoneum enclosing in their upper wings the ovary, the oviduct and the round ligament.

Phlegmon of the broad ligaments (utero-pelvic cellulitis) is frequent; it is a common malady in the puerperal state, and may be developed from the second to the twentieth day after labour: it may be seen in nulliparæ and even in virgins, but is rare in the state of vacuity. Rigor is not constant, occurring only in about half the cases; frequently it is only produced at the time of the formation of pus. There is dull pain in the abscess, darting at intervals, with a feverish, full pulse. The tumour is lateral and not median as in pelvic peritonitis, extending easily, generally perceived in the broad ligament, and above the margin of the pelvis; from the first there is the sensation of a cord when abdominal palpation is practised (if when the uterus is

seized with the thumb and middle finger, they are passed along the sides of the organ from above downwards, in place of the soft and supple annexes a cord is encountered, directed from the cornua of the uterus towards the anterior part of the iliac fossæ; this cord is hard, tense, and always painful on pressure at the enlarged point); the tumour is sometimes hardly accessible to vaginal touch; always to be felt at the hypogastrium from the beginning, owing to the tendency of the inflammation to be propagated to the neighbouring areolar tissue, especially in the iliac fossa; it is sometimes developed indistinctly and slowly, the reverse of pelvic peritonitis; it is generally first perceived on the sides of the pelvis, probably because it commences

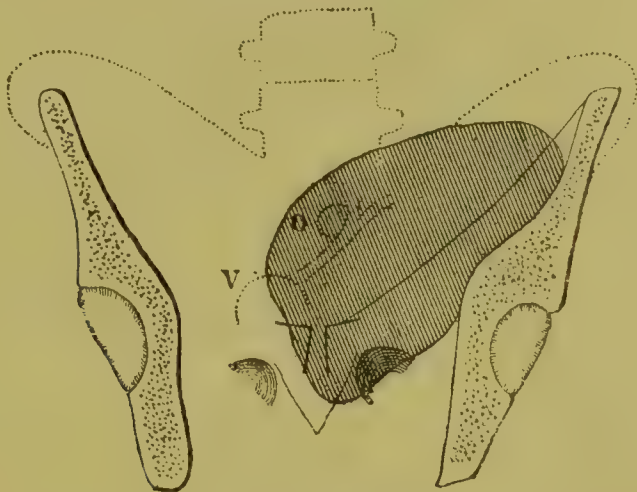


FIG. 322.—Phlegmon of the left broad ligament pushing back the uterus to the right, with diffusion into the pelvis. Formation of an abscess. Opening by the inguinal canal (round ligament), below the crural arch, by the obturator foramen on the left side of the vagina (Courty).

where the cellular tissue is loose; it is probably also for the same reason that it extends to the internal iliac fossa, the anterior abdominal wall, the crural canal and to the buttock, as well as to the side of the uterus; tumefaction is perceived later on at the side of the womb on account of the condensation of the cellular tissue at this point, thus it generally progresses from the periphery to the centre and from above downwards; it may commence or terminate by inflammation of the utero-ovarian veins and pampiniform plexus. Percussion gives a dull sound laterally, a clear sound in the middle of the hypogastrium. By vaginal touch the tumour is felt at the bottom of the lateral *cul-de-sac* on the sides of the vagina and cervix, under the form of an œdematous plaque, sometimes as hard as wood and regular, often without either indentations or irregularities, not sensitive and almost completely immobile; the internal part embraces the cervix with which it is continuous, or from which it is only separated by a narrow groove; at the border of the *cul-de-sac* the induration may double on itself and be prolonged round the walls of the vagina, sometimes even the latter is to a great extent enveloped in this kind of lining; the tumour then becomes soft, pasty and fluctuating.

As in internal abscesses, œdema appears in the superficial parts and neighbouring tissues: thus the cervix, vagina and corresponding labium are manifestly œdematous; this fact, to which I have often called attention, has not been sufficiently noticed as an element of differential diagnosis. The uterus is only fixed to a limited extent; in place of being completely immobile as in pelvic peritonitis, it preserves a portion of its mobility, its lateral movements only being very restricted; the organ is not displaced if the phlegmon is small; in the contrary case there may be three kinds of displacement, answering to differences of extent and seat in the phlegmon; if the tumour occupies the whole broad ligament, the uterus is inclined to the other side; if it is less developed, it is the fundus or the cervix which is pushed back to the opposite side, according to whether it is the upper or lower part of the broad ligament which is the seat of the tumefaction; after cure, owing to the retraction of the inodular tissue the uterine displacement is the reverse of what it was originally. The groove separating the uterus from the tumour is absent or hardly apparent. The dull, heavy, strong, continuous pain has nothing in common with that of peritonitis; it is caused by micturition more than by defecation, is elicited by pressure on the lateral portion of the vagina and on the hypogastrium above the crural arch. Shortening of the thigh is very common, although not as constant as in sub-aponeurotic abscesses, and especially inflammations of the psoas and internal iliac fossa. There are no general signs of peritonitis; no nausea, nor excessive vomiting nor tympanitis, nor alteration of the face, nor concentrated pulse. Febrile phenomena predominate over functional alterations of the digestive economy: the latter are more like the symptomatic digestive disorders of pregnancy or those of a malady of the fundus than of peritonitis. There is marked tendency to suppuration and to the formation of abscesses, but no tendency to monthly relapses. The duration of the malady is limited and varies according to whether it terminates by resolution, induration or suppuration.

Pelvic peritonitis is very common whether puerperal or non-puerperal, acute or chronic. It may occur in the state of vacuity, as a sequence of menstrual disorders, ovaritis, traumatism or abortion. When puerperal it is developed during the first ten days, generally sooner than phlegmonous inflammation. Shivering is never absent, especially at the outset. In the beginning pain is acute and at one point, recalling that of pleurisy; the pulse is frequent, hard and concentrated. The tumour is usually situated in the utero-rectal *cul-de-sac*; but it may be perceived at several other points round the uterus, though it does not project much except in the posterior vaginal *cul-de-sac*, where the longest prolongation of the peritoneum is found. The effects of it are felt sooner than those of phlegmon, on account of the rapid development of peritonitis and adhesions; at first it attacks the lowest parts extending from below upwards and from the centre to the periphery (unless the Fallopian tube or ovary have been the starting-point); it does not rise above the brim unless there have been successive attacks of inflammation or extension of the disease to the whole peritoneum;

it depresses the posterior vaginal *cul-de-sac* to the point of descending below the cervix, but not round the walls of the vagina; it is hemispherical, rounded, often indented and irregular; projecting into the vagina in front, into the rectum behind; it is resistant and hard, but not woody nor œdematous; it is immobile. The uterus is also im-

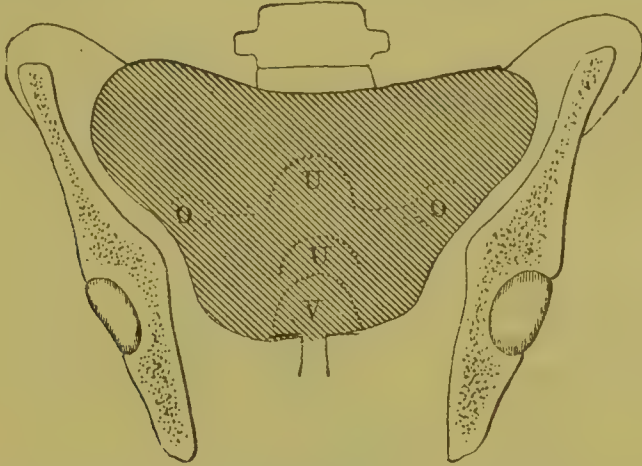


FIG. 323.—General pelvic peritonitis, rising to below the umbilicus, seen in front, raising the uterus and annexes.

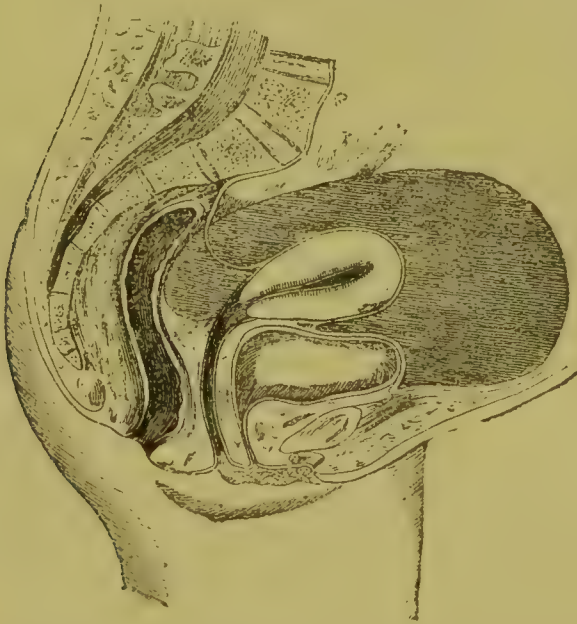


FIG. 324.—General pelvic peritonitis and intra-peritoneal pelvic abscess, seen in profile, felt through the vagina and hypogastrium (after Graily Howitt).

mobile in every direction, fixed by the tumour and always displaced; the neck is deviated either to the side of the tumour or to the opposite one, according to whether it presses on the body or neck; usually the whole organ is pushed upwards and forwards towards the pubis. The groove separating the uterus from the tumour is always appreciable. Pain is often very acute; it is elicited by defecation, digital pressure

in the vagina and by pressure over the hypogastrium: the tumour is never indolent.

A vague, diffuse, resistant tumefaction is felt through the abdominal walls when the pain is not extreme; usually excessive abdominal sensitiveness is developed above the pelvis, towards the median line; shortening of the thigh never occurs. The general signs of peritonitis are manifested: excessive pain, frequently with paroxysms, prostration, the face drawn and anxious, nausea, green vomiting, distension of the belly, tympanitis, quick and concentrated pulse; the digestive symptoms predominate over the febrile phenomena. But slight tendency to suppuration, marked tendency to monthly relapses; duration is



FIG. 325.—Left lateral pelvic peritonitis, encysted, with pelvic peritoneal abscess surrounding the ovary, tube and uterus with adhesions.

long, the malady being prolonged by frequent recurrences to the acute state. In short, acute perimetritis is more easily confounded with retro-uterine hematocoele than with phlegmon of the broad ligaments.

Peri-uterine adenitis follows pelvic cellulitis, pelvic peritonitis, or more frequently still chronic endometritis with leucorrhœa and ulceration; it hardly forms a tumour; it is perceived by the touch in the form of indentations, nodosities and induration in the connective tissue of the base of one of the broad ligaments and the posterior region of the uterus. It scarcely alters the mobility of the uterus. It is painful on pressure and when the uterus is moved; it lasts long; cure is difficult; there are hardly any relapses or inflammatory paroxysms, but on the other hand there is no tendency to resolution.

2. Distinctive signs of peri-uterine inflammations and other maladies of the *uterus*, its *anncres* and of the *pelvic cavity*.—*Acute metritis* is distinguished by less intensity of the general and local phenomena, by the different seat of pain, which occupies the whole belly, by its expulsive character, by leucorrhœa, more frequent vomiting, the absence of a tumour and especially by the mobility of the uterus, which is recognised as the only tumour occupying the centre of the hypogastrium.—Simple *ovaritis* forms a smaller tumour than that of perimetritis, smooth, mobile, very painful, raised behind the body and one

of the borders of the uterus ; when complicated, it is the centre of true pelvic peritonitis.—Simple *salpingitis* forms an elongated tumour, either knotted or globular, perceptible by palpation associated with touch, on one side of the uterus, being continuous with one of the cornua ; when complicated, it also is the centre of true pelvic peritonitis.—*Cystitis* is known by examination of the urine and is easily distinguished from perimetritis.

The diagnosis of *chronic perimetritis* is the most difficult. *Engorgement* of the uterine walls is less hard than peri-uterine phlegmon, and can be slightly depressed. It is not limited to one side or to one part of the uterus ; there is no border round the neck, nor any groove indicating the boundary between the womb and the peri-uterine engorgement. *Pregnancy* is distinguished by the uniform development of the body of the uterus, which is globular, without any groove, of normal consistency, increasing daily in size. *Interstitial fibrous tumours* are distinguished by the same characters, by the absence of any groove, by hardness, absence of sensibility, the less frequent existence of arterial pulsations, the mobility which the uterus preserves in spite of its increased size. *Fibromata* and *sub-peritoneal myomata* may occupy the cavity, making diagnosis difficult. We must remember that they are harder, round, often multiple, more or less mobile, indolent, &c. They sometimes become enormous. *Deviations* and *flexions*, which have given rise to frequent errors, are distinguished by the fact that the body of the uterus can be found nowhere apart from the tumour. The uterus must be held simultaneously with the tumour, to be quite certain that the latter exists ; the sound facilitates the diagnosis.

Amongst *extra-uterine tumours*, *phlegmon of the internal iliac fossa* has a recognised seat and boundaries. In order to feel it the abdomen should be depressed behind the ilium, and not behind the crural arch ; no tumour is found in the cavity by vaginal touch ; the *culs-de-sac* are free and supple, the uterus quite mobile ; the thigh is flexed, the nerves supplying it and the genital organs are the seat of neuralgia. If the peri-uterine cellular tissue is invaded no distinction can be made ; it is the same malady, differing only as to seat and extent. Tumours formed in the rectum by *retention of stercoraceous matter* have led to mistakes. They are sometimes soft and depressible, sometimes hard and indented ; they can be recognised by rectal touch ; an enema given several days running removes all doubt. Sometimes the two maladies are observed simultaneously, for the coexistence of a peri-uterine phlegmon with constipation is not uncommon. *Peri-uterine hematocoele* is perhaps the malady which can most easily be confounded with acute sero-adhesive pelvic peritonitis. There is more resemblance between these two diseases than between pelvic peritonitis and peri-uterine or latero-uterine phlegmons. Nevertheless, hematocoele does not commence under the same circumstances or in the same way ; the history of the case gives the clue to the differential diagnosis. It frequently follows sudden suppression of the menses. The formation of the tumour is very rapid, and is accompanied by the general symptoms of hæmorrhage, acute pains like those of peritonitis, and by

fluctuation from the beginning, which is the reverse of what takes place in pelvic peritonitis. Pain and reaction soon make confusion possible. But the tumour gradually hardens owing to coagulation of the blood, in place of softening; it is not so sensitive to pressure as the inflammatory tumour of pelvic peritonitis; its usual seat is behind the uterus, which is pushed forwards and upwards against the pubis. An exploratory puncture removes all doubts; it is not, however, necessary. When hemothecle is accompanied by pelvic peritonitis, as happens in the most painful and troublesome cases, it requires the same treatment as acute pelvic peritonitis. Peritonitis furnishes the dominant symptoms and affords the chief indication.

Tuberculisatio of the ovaries, broad ligaments and tubes is more difficult to distinguish, for it is but a chronic and diathetic perimetritis. *Cysts*, especially ovarian cysts, whether serous or purulent, present evident fluctuation unless there is very great distension, thickening of their contents, or too great multiplicity. A characteristic globular, mobile form is felt by the vagina and hypogastrium. They are not painful on pressure, nor is there any arterial pulsation. *Extra-uterine pregnancy* forms a heterogeneous mass, composed of soft and hard parts, mobile, unequal, &c. Perimetritis may coincide with it, or with a serous or purulent cyst. As for *sub-aponeurotic abscesses*, hydatid tumours, cancer, and even aneurisms which may be developed in the pelvic cavity, they give rise to pathognomonic symptoms which allow of their being easily distinguished from peri-uterine inflammation.¹ Lastly, chronic peri-uterine inflammation must not be confounded with maladies like pulmonary tubercle which are connected with diathetic general affections, and gradually produce consumption. The antecedent circumstances, the general symptoms, the *facies uterina*, dyspepsia, the symptoms of neighbourhood, viscid leucorrhœa, &c., lead to a direct examination, and consequently to the differentiation of two maladies which may indeed coexist in the same patient. The general symptoms may be analogous and increase the confusion, but the local symptoms and, above all, the presence of the retro-uterine or peri-uterine tumour, remove all doubts.

Peri-uterine abscess.—The only termination of perimetritis of which I have not yet spoken because it presents special signs, is the termination by suppuration and the formation of pelvic or peri-uterine abscess, called by Puzos² and Van Swiéten, *depôts laitoux*. This termination is rare, according to West it occurs fifty-one times in 100 cases, but according to Aran, Gallard and Gosselin only from seven to ten times in 100. Under the influence of crowding, weak constitution, lymphatic temperament, a cachectic state, the puerperal condition, or in the absence of special treatment, acute peri-uterine inflammation terminates in suppuration; or under the influence of external irritation, a blow, a fall, or some menstrual disorder, chronic peri-uterine inflammation passes into the acute stage and may become purulent.

¹ See *Dictionnaire encyclopédique des sciences médicales*, art. Bassin (pathologie).

² *Traité d'accouchements*, 1743.

The pus may be infiltrated or collected together according to whether suppuration is rapid or slow. 1. If suppuration of the peri-uterine cellular tissue is rapid, recent diffuse abscesses are formed, according to Nonat, the relations of which vary according to the seat and extent of the inflammation. There is a retro-uterine or recto-uterine abscess, which must be distinguished from intra-peritoneal purulent collections, an ante-uterine or vesico-uterine abscess which is rare, a lateral abscess which separates the folds of the broad ligament and bathes the Fallopian tube and ovary in pus. Usually the pus spreads round the uterus filling the pelvis, and may even reach the iliac fossæ or rise to the umbilicus. There is no doubt it happens much oftener in peritoneal suppuration than in phlegmons. However, according to Nonat, fragments of cellular tissue, vessels, nerves, &c., are found in the centre. 2. When suppuration is slow, the pus is collected in a focus enveloped in a pyogenic membrane, forming one or more circumscribed encysted tumours in relation with the neighbouring organs, which may also possibly result from a serous cyst, or suppurating hemocele; sometimes pus is formed in a latent manner, and is not suspected till evacuated. When there is much of it it may be supposed to come from the peritoneal cavity; when there is little, it is more likely to be from an ovarian or tubal abscess. From one of these centres which was larger than the uterus at term 15 litres of pus were evacuated. It may be accumulated in a kind of cyst and remain there for a year, becoming very dense, in place of remaining serous, as when recent. These abscesses may open spontaneously into the peritoneum, which is rare and is a cause of rapid death, or they may open into the rectum or vagina, or even into the bladder, on the abdominal wall, or even by various orifices such as the inguinal canal, crural canal, the obturator foramen or the sciatic notch (Fig. 326). In one case which was verified by autopsy, Seux¹ saw the pus discharged through the posterior wall of the uterus. According to Graily Hewitt² the most frequent opening is into the intestine; it is also rather frequent into the vagina and bladder. It is less common along the course of the vessels or nerves leaving the pelvis. With regard to this, a wide distinction must be made between a *perimetric* and a *parametric* abscess and one of the broad ligament. They have common points by which they may be discharged, notably the rectum; but there are points of selection by which some open rather than others, for example, the rectum and bladder, for the abscess of pelvic peritonitis; the abdominal wall or the groin, for abscess of the broad ligament. The former has besides a greater tendency to become encysted and to be tolerated, the latter to ulcerate and discharge the pus.

As the purulent matter is discharged at certain points determined by exact anatomical connections, the place of opening of the abscess is a last means of completing the differential diagnosis. *Suppurative pelvic cellulitis* having less tendency to open by the abdominal wall and into the intestine, or even into the bladder and uterus, may be

¹ *Bulletin de la Société impériale de médecine de Marseille*, 1862, p. 87.

² *Op. cit.*, p. 228.

discharged by the vagina or even by the rectum, all round the anterior part of the brim, by the crural arch, the inguinal canal, the obturator

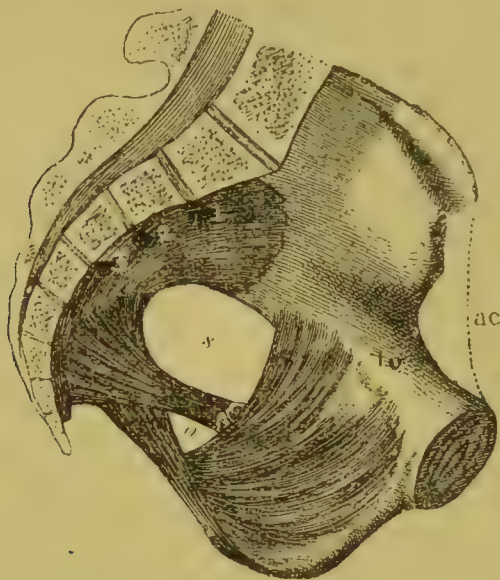


FIG. 326.—Points in the pelvic cavity by which the pus of phlegmon of the broad ligament may be discharged, *ac*, above and below the crural arch. *s*, the great sciatic notch; *o*, the small sciatic notch; *to*, the obturator foramen; 1, 2, 3, the sacral foramina.

foramen, as well as by the sciatic notches; I have seen some open simultaneously into the vagina (by the lateral wall), below the crural arch. and in the centre of the buttock at the highest part of the sciatic

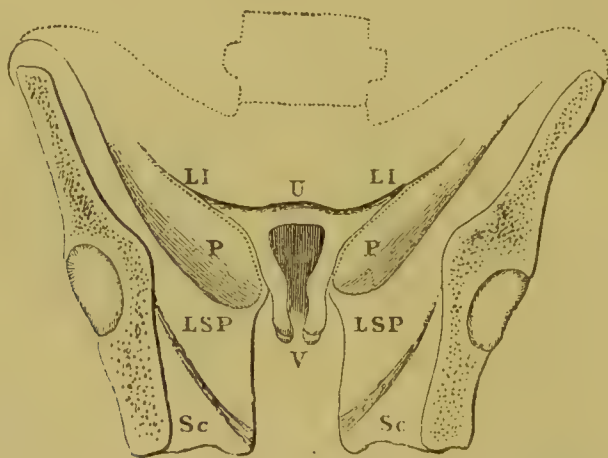


FIG. 327.—*v*, vagina; *u*, uterus; *LI*, upper border of the broad ligament; *P*, peritoneum in which sero-adhesive or sero-purulent peri-uterine inflammation is developed; *LSP*, sub-peritoneal space of the broad ligament on each side, rising to the upper border *LI*, in which suppuration of the phlegmon of the broad ligament takes place; *sc*, subcutaneous space where abscesses are formed, which only open round the anus and vulva.

notch, at a point through which an india-rubber bougie might be passed

to the centre of the pelvis where the point could be felt by vaginal touch through the vaginal wall.

Suppurative pelvic peritonitis then may be discharged by the rectum, vagina, bladder, or even the uterus, and at various points of the abdominal wall as well as into the intestine, the sigmoid flexure, cæcum, or small intestine. I have seen one opening simultaneously into the vagina, into the intestine, and through the abdominal wall at a point more or less distant from the crural arch. Abscesses which are subcutaneous and subaponeurotic, *i.e.* below the deep perinæal aponeurosis, open round the vulva and anus. The accompanying figure explains how it is that one abscess should open at one point and another abscess at another point.

The suppuration which follows puerperal perimetritis has a rapid course, terminating fatally in a few days. In non-puerperal perimetritis, pus may appear in a fortnight or even sooner. Nonat does not think it possible that pus can be absorbed; however, I have seen cases of the kind, but the tumours were small. When, however, art does not intervene at an early stage, purulent collections usually make way for themselves to the teguments or to some hollow organ. Some days previously there is exacerbation of the symptoms, then suddenly after a fall, contusion or effort the tumour suddenly gives way bringing relief. Sometimes there is no particular sensation, at other times there is a sensation of internal laceration, and passage of pus into the vagina, which is a favorable termination. I have recently seen a case of this kind in a patient who would not allow vaginal puncture to be attempted, and in struggling the abscess broke into the vagina: cure soon followed, but it was impossible for me to find the vagino-uterine orifice by which the abscess was discharged.

Evacuation may either be complete or not; it then takes place several times. At the monthly period the pus becomes sanguinolent. When the opening is made into the rectum there may be tenesmus, dysentery, and the most serious accidents, as Aran once saw in a virgin. Except in cases where the pus is effused into the peritoneum, death seldom follows rupture of the abscess, though it may result from prolonged suppuration, from the formation of fistulous passages and from the marasmus into which patients finally fall. I have already said what happens when several openings place the abscess in communication with the bladder and rectum simultaneously, sometimes even with the abdominal wall as well. Consumption may occur in these cases, as well as in those where the evacuation of pus is incomplete, where the abscess opens and closes several times, where there is stagnation of pus owing to the existence of only one opening for two or three abscesses.¹ If, on the contrary, the opening is large, and the

¹ Nevertheless, there are cases in which the constitution of patients is able to resist the continued secretion of pus, perforation of the digestive canal, &c.; I have just seen a case of the kind, where, in spite of the fear of peritoneal adhesions of the tubes hindering the adaptation of the fimbriated extremity to the ovary, and so causing sterility, suppuration had hardly ceased, the patient still being convalescent, when she became pregnant.

abscess well emptied, the symptoms disappear: hence the justification for surgical intervention, the right limits of which I shall try to define when describing treatment.

Treatment.—Peri-uterine inflammation, apart from that which is developed in the worst conditions of the puerperal state, is serious, not from the rapidity of the termination, but from the long duration and natural incurability of the chronic form, the constant dangers incurred by the paroxysms, and the risk of consumption which is all the more serious, as Aran considers that two thirds of the women attacked by chronic perimetritis are predisposed to tubercle. Besides which, if the malady is allowed to become intense or be prolonged, sterility follows, except very exceptionally, when the peritoneum is not involved in the inflammation, or when the annexes of one side have preserved their integrity; pregnancy is always difficult, as Madame Boivin¹ has shown, but she attaches too little importance to remains of inflammation and exaggerates the mechanical influence of adhesions. It is evident that the treatment of perimetritis ought always to be considered as urgent, and this should be explained to patients as well as the length of time required.

I shall not speak of prophylactic treatment, which consists in avoiding all fatigue after delivery, rising too soon, marital intercourse, cold injections, cold foot baths, and also the sudden suppression of the milk, but shall now pass on to treatment strictly speaking. The chief indications are the following: 1, to subdue inflammation; 2, to promote resolution of the tumour; 3, to treat the diathetic affection under the influence of which chronic inflammation has a tendency to perpetuate itself; 4, to treat complications; 5, when necessary to promote the evacuation of pus.

1. Antiphlogistic treatment is so plainly indicated, that all physicians² are agreed as to its occupying the first place in the treatment of the acute form, but opinion is divided with regard to it in the chronic form, especially as to bleeding.

Experience has taught me the wisdom of limiting myself to local bloodletting, though I do not deny that bleeding may be indicated exceptionally in a strong woman of sanguine temperament. In acute perimetritis leeches or cupping glasses should be applied to the abdomen even in the puerperal state, and should be repeated at short intervals. The apparent amelioration effected by a first application associated with narcotics must not be trusted to; fresh applications

¹ *Recherches sur une des causes les plus fréquentes et les moins connues d'avortement.* Paris, 1828.

² Béhier recommends preventive treatment. Whenever the cord is felt, which, according to him, is the first sign of the development of phlegmons of the broad ligament, continuous refrigeration is applied to the abdomen. An india-rubber bag, two-thirds full of pieces of broken ice, is placed over the painful region, with a wet towel folded in eight under it, to prevent its being in immediate contact with the skin, the whole being kept in place by a large towel which allows the patient to move without any danger of disarranging the ice. The application of cold should be continuous. The success obtained by this treatment has been described by Briand in his thesis and by Joulin in his *Traité d'accouchements*, p. 1171.

should be made three or four days running, gradually diminishing the number till pelvic pain is no longer elicited by pressure. Leeching is impossible when inflammation is very acute on account of the difficulty and pain caused by the introduction of the speculum; but it should be resorted to as soon as the local symptoms are somewhat alleviated, as well as in chronic perimetritis. Bloodletting produced by leeching is neither revulsive nor derivative; it is really depletive. This depletion of the utero-ovarian sanguineous system is necessary to ensure the efficiency of the revulsive and resolvent treatment which is to follow. It has seemed to me insufficient in itself to produce a cure, especially in the chronic forms of these maladies.

Further: bloodletting alone, whether local or general, especially in chronic peri-uterine inflammation, as in all other chronic phlegmasias, congestions and engorgements, is followed by a decided aggravation of symptoms, if not immediately, at least subsequently. I have so often had occasion to observe these troublesome results, that I have not the slightest doubt on the matter, and explain the phenomena by the increased instability produced in the organism by the debility of the patient. As a rule the weaker a patient is the greater tendency will there be to fluxionary movements followed by more or less intense congestion, especially in the organs which have become the seats of these fluxionary movements. The equilibrium once broken is lost by increased general debility. Restoration of tone and strength to the economy can alone re-establish it, and facilitate the gradual disappearance of local inflammatory phenomena. Therefore depletion of the utero-ovarian vascular system by leeching the cervix ought to be as complete and as rapid as possible, so that it may not be necessary to recur to it unless in cases of chronic inflammation with exacerbations, which can never be removed quickly nor at once. When necessary, therefore, I always make two or three consecutive applications after menstruation. When one application has produced a very abundant flow of blood necessitating plugging, cure follows very rapidly. This depletion of the utero-ovarian vascular system ought to be accompanied not only by other antiphlogistic means, but by strong revulsives and resolvents as well as by tonics.

Absolute rest should be enjoined in acute inflammation; patients instinctively feel the necessity for it, the semi-flexed position being the most favorable to relaxation of the muscles compressing the inflamed parts. Bernutz rightly insists on confinement to bed being prescribed as for men in cases of orchitis. In fact even in the chronic form patients should take as much rest as possible, both mental and physical, and should always keep their bed at the monthly period. Marital intercourse should be absolutely forbidden, for unless the suffering organ has perfect rest treatment is powerless to effect a cure. I agree, however, with Bernutz that in the last stage of the malady there is no occasion to dread the occurrence of conception, which sometimes takes place easily at the end of the menstrual flow. Pregnancy indeed is one of the most effectual means of modifying the diseased organs and of completing the resolution imperfectly produced by the various medi-

cations employed, that is if proper care be taken during gestation and after labour.

In order to allow patients to rise without interfering with the relative rest required for the abdomen, Bernutz has invented a particular kind of corset, which is useful, not because it fixes the organs as he thinks, but because it supports them and especially prevents the effects of shocks during a period of the disease when the hypogastric belt and cushion (very superior as a means of supporting the abdominal viscera) could not be tolerated on account of the sensitive state of the abdominal region. According to Bernutz this corset plays the same part that the sling does for men affected with orchitis. The idea of supporting the abdomen is good : the best belt is that of Bourjeaud with or without the air cushion according to the indication. Strict diet should be observed during the acute stage, and even in the transition stage great prudence should be exercised. In the chronic form, on the contrary, the diet should be very nourishing, though light and digestible, so that the patient may regain flesh and strength. Emollients should be applied in every form : linseed poultices to the abdomen, fomentations of decoction of marshmallow or poppy-heads, and when these are not tolerated, embrocations of camphorated oil ; enemata of the decoction of marshmallow, linseed, poppy-heads, starch or oil ; prolonged tepid baths as soon as they can be borne, repeated daily in the acute stage, twice or thrice a week in the chronic form, vaginal injections being made all the time of the bath. Vaginal injections should also be made on the bidet with starch and water, and in some cases poultices in muslin bags should be introduced as far as possible into the vagina ; they may be made of linseed, *fucus crispus* (Lelièvre's instantaneous cataplasm), &c. : such are the different ways of employing emollients concurrently with antiphlogistic treatment.

In acute perimetritis, as in peritonitis, rest should be ensured to the intestines and pain alleviated by the use of narcotics, especially opium. One of the great uses of opium is to put a stop to the stimulation produced by pain which is a continual cause of fluxion (*ubi stimulus ibi fluxus*), and thus two elements of the inflammation are subdued simultaneously. It is useful also in suppressing alvine evacuations and of giving absolute rest to the intestine, which is so necessary in alleviating the inflammatory phenomena : when required, laxative enemata should be administered previously, by means of a large rectal or œsophageal sound introduced far enough to pass beyond the tumour (which often projects into the rectum and compresses it), so that the fluid may penetrate into the colon. After an evacuation produced by this simple means rest is often obtained for the intestine. While, however, using narcotics to alleviate pain, the physician should beware of mistaking the insensibility produced for real improvement and consequently of omitting to prescribe a fresh application of leeches when required. When leeching followed by the use of other means just enumerated fails to relieve the inflammatory symptoms, or when the weakness of the patient does not allow of bloodletting, recourse may

be had to mercurial and belladonna ointment : from $\mathfrak{3v}$ to $\mathfrak{3vij}$ of the ointment is spread on a large compress and laid on the abdomen ; this plaster is better than frictions, which aggravate the pain. A thick layer of cotton wool should be laid over it and waterproof over all in order to maintain a moist heat over the abdomen, which helps the absorption of the ointment. The external application of mercury may sometimes be associated with the internal use of calomel. Small doses of calomel may be given combined with jalap. But I do not think that the intestinal fluxion produced is favorable to the resolution of the inflammation nor that salivation is desirable ; for even supposing it efficacious it is attended by so many disadvantages that I have quite given it up.

II. The second indication is to try to obtain resolution of the tumour and of the liquid and solid matter which has been deposited on the peritoneum. Having explained how useful intestinal rest is during the acute period, it is needless for me to say that purgatives should be proscribed during this period.

After bloodletting Bernutz recommends that the whole abdomen should be covered with a camphorated blister. This means certainly may be of great use, but should only be applied in very serious cases. Usually blistering is indicated rather at a later period. When resolution commences but progresses slowly a hypogastric blister is an excellent means. We may then follow the example of Piedagnel, Nonat, &c., and powder it with gr. $\frac{1}{2}$ or gr. $\frac{3}{4}$ of hydrochlorate of morphia to prevent its causing pain. The blister should not be applied at the time of the monthly period, and its effects should always be carefully watched. It is, however, in the transition stage of the disease to the chronic form and in the latter period that blisters are of most use ; they may be said indeed to be the best means of causing the disappearance of plastic products. Velpeau has been the means of their being largely used in such cases. They are applied after bloodletting or substituted for it when there are signs of the formation of pus. One may be applied every month, a few days after menstruation ; but if necessary it may be repeated two or three times a month, and should exceed the size of the tumour. They are applied to the hypogastrium, to one or other of the iliac fossæ, to the loins, sometimes to the buttock. They should be removed in twenty-four hours and the serum evacuated, care being taken to leave the epidermis in place. A thick layer of cotton-wool should be applied and kept in place by a bandage for several days, as in the case of a burn. Aran boasts of the efficacy of blisters applied to the cervix in chronic perimetritis, but I confess that their use has always seemed to me more suitable in chronic leucorrhœa than in peri-uterine inflammation. The cauteries, moxas and setons proposed by Huguier and Gosselin are not so useful as in the treatment of ovaritis. The blister acts on a larger surface, it stimulates more suddenly, and its repeated action is more favorable to the elimination of the serum and pus than the continuous but slow and moderate action of these exutories.

The action of resolvents and alteratives should be associated as soon

as possible with the former means. Preparations of mercury, iodine, gold and arsenic should be administered internally, whilst externally frictions should be made daily with mercurial or iodine ointment, or the hypogastrium may be painted with tincture of iodine.¹ In such cases, as in ovaritis, I have found small enemata of resolvent ointment of great use; they are better than suppositories because they can be introduced farther, they melt more easily, are tolerated better and are more easily absorbed. The injection of mercurial ointment per rectum may be associated with painting the hypogastrium, cervix and vagina with iodine; or the application of mercurial ointment on the hypogastrium may be associated with iodide of potassium per rectum and tincture of iodine per vaginam. The action of these medicaments is increased by tepid and prolonged alkaline or saline baths, by the use of iron, tonics, generous diet and residence in the country, by the use of mineral waters (alkaline and chloride of sodium waters, such as those of Plombières, Ems, Soden), and at a later period by cold sitz-baths, cold abdominal compresses, cold enemata—hydropathy in short—which may be continued for several months till the menses have recurred regularly several times. When the malady is on the decline or when resolution is effected, mineral waters are suitable for the treatment of complications and for restoring the strength; sea-bathing, hydropathy, sulphur or iron waters, the waters of Luchon, Cauterets, St. Sauveur, Spa, Plombières, Nérès, are indicated. Hydropathic and hydromineral medication is not merely palliative. It is the best adjuvant of resolvents. Further, these waters have an essentially resolvent action of themselves, in addition to the tonic, restorative or sedative action which they exercise according to their nature or to the manner in which they are administered. Only this action varies with the patient and the period of the malady; it varies according to the nature of the diathetic affection which complicates the peri-uterine inflammation; it varies also with the mineral water and with its mode of administration. Hence another action beyond that of simple absorption of plastic products, which leads to these medicaments being classed among those which fulfil the third indication in the treatment of perimetritis.

III. The third indication is to treat the diathetic affection under the influence of which chronic perimetritis has a tendency to be perpetuated, and at the same time restore the weakened and deteriorated organism. Pelvic peritonitis being according to Bernutz a malady symptomatic of very different affections, presents very various therapeutical indications, not only according to its acute or chronic form, its sero-adhesive or purulent nature, but according to the indications furnished by the diathesis of which the inflammation of the serous membrane is a remote manifestation. Bernutz therefore recommends mercury when there is reason to believe that the diathesis is syphilitic, turpentine when there is blennorrhagia, &c.

¹ Joannowsky of Prague (*Prager Vierteljahrschrift*, 1878) has proved that iodine is absorbed and is found in the urine. Out of 30 women treated by painting the hypogastrium, cervix and vagina with iodine, 11 were cured, 14 improved.

It is in chronic pelvic peritonitis that the principles of Bernutz may be applied. He recommends the alkaline waters of Vichy if dyspepsia predominates, hydropathy if the symptoms are nervous, sulphurous baths if scrofula has previously existed, arsenical baths if there is any cutaneous affection the result of scrofula, arthritis or rheumatism. The determination of the diathesis, to which the chronicity of the inflammatory action is to be attributed, deserves the careful attention of the physician. Bernutz usually associates hemlock with this antidiathetic medication. He considers it the specific narcotic of the genital organs, and increases the dose till disorders of vision and hallucinations are produced. He is not, however, sure of its efficacy. As to iodide of potassium, I do not see that its administration is contra-indicated, as he says, by the necessity of feeding up patients.

IV. The complications which coexist with perimetritis or which persist after its cure must also be treated. Vomiting is one of the first complications which may require treatment, for it is symptomatic of peritonitis. It appears at the most acute period of the disease and returns with every exacerbation. In order to stop it nothing should be taken but fragments of ice from time to time or a little iced champagne, lemonade or soda water; sedatives should be given externally and internally, opium, belladonna, chloroform, a blister powdered with hydrochlorate of morphia on the epigastrium, nux vomica or strychnia in small doses or subnitrate of bismuth. One of the best preparations is the following: Pulv. Radic. Calumb., Calc. Carb. prep. āā gr. $1\frac{1}{2}$ to gr. 3; Pulv. Bellad. Radic. gr. $\frac{1}{10}$ to gr. $\frac{1}{3}$ mixed and given in a spoonful of iced water, and repeated every four hours or oftener if necessary. The distension of the belly which often occurs with vomiting should be treated with poultices sprinkled with camphorated oil or with iced compresses. Constipation necessitates the administration of simple or laxative enemata introduced by a thick and long cannula; mild laxatives may be given by the mouth in the chronic period, and in the absence of acute pain in the belly. When it does not yield to these means, cold ascending douches should be prescribed or pills containing from gr. $\frac{1}{3}$ each of the extract and powder of bellad. and gr. $\frac{1}{50}$ of strychnia, a little sulphate of zinc, or even a little aloes with great prudence. If diarrhœa occurs, it should be treated with bismuth or opium, giving from gr. 3 to gr. $4\frac{1}{2}$ in the day, care being taken to give it in small doses at a time. Small enemata may also be given containing a little laudanum or nitrate of silver in the proportion of gr. 3 to gr. 6 in $\mathfrak{z}\text{ij}$ of water.

Pain and neuralgia are the most frequent complications during and after the malady. I have already explained how the pains of acute perimetritis should be subdued by large doses of opium which also ensure the rest so necessary to the viscera. Anodyne fomentations should be applied simultaneously with the same object. Bernutz recommends a bath every three or four days, and from 5 to 7 grains of powdered hemlock every day. When pain occurs suddenly in the loins or belly during chronic perimetritis, it is usually the sign of an

exacerbation : one of the best means of dissipating it is to leech the cervix and then apply a blister to the abdomen or rub with croton oil, care being taken to cover the part afterwards with adhesive plaster to prevent pain being produced by contact with the clothes. When pain continues and uterine or peri-uterine hyperæsthesia also exist, Aran's application of laudanum may be tried, which consists in pouring a little into the vagina by means of a speculum and then applying a tampon. In place of simple pain, there is often neuralgia, even at the commencement of the disease in hysterical patients, but generally at the end. This neuralgia is best subdued by the application of a small ammoniated blister to the painful part, which must be afterwards dressed every day with hydrochlorate of morphia, or by subcutaneous injections of this salt. Lastly, as the final treatment of the nervous symptoms which persist after pelvic peritonitis, recourse should be had to hydropathy and to residence in the country, as the best adjuvants of narcotics, faradisation, the continuous current, &c.

There may be hæmorrhage in chronic perimetritis though this seldom occurs ; when it does, hæmostatics should be administered, such as lemonade, mineral acids, rhatany, cold or acid applications to the hypogastrium, or on the contrary very hot injections ; sometimes a blister on the iliac fossa stops the flow. Ergot should never be employed in such cases. As for the other complications, metritis, uterine catarrh, leucorrhœa, vulval pruritus, deviations, &c., they are ameliorated by the treatment of perimetritis, but should not be attacked directly till after the peri-uterine inflammation has been cured.¹

V. The opening of the purulent collection. In the case of acute pelvic peritonitis puncture may be made through the vagina. This often simplifies the malady and hastens cure as in cases of acute pleurisy with effusion ; but as it is attended with some risk it is usually preferable to wait the formation of pus. Even when pus is formed, opinions are divided as to whether the abscess should be opened. Bourdon² is in favour of the artificial opening of pelvic as of all other abscesses ; he says "the presence of pus facilitates its formation ; the tumour may be very large and the pus may travel a long way producing irreparable mischief ; the abscess finding no external outlet may be discharged into the peritoneum ; and if the opening occurs spontaneously or is made late, patients are condemned to sufferings which they might have been spared ; it may also open at an unfavorable point for the discharge of pus ; and lastly, in many cases the patient being greatly enfeebled by a long malady is no longer in a favorable condition for recovery after the opening of the abscess, even in the absence of interminable fistulæ and suppurations." Nonat also insists on the necessity of opening abscesses : the presence of pus may cause peritonitis, even phlebitis with general disorders and

¹ Piotowsky (*Du catarrhe utérin dans la pelvi-péritonite et de son traitement*) places beyond doubt the dangers attending too hasty intervention.

² *Tumeurs fluctuantes du petit bassin* (*Revue médicale*, 1841).

perforations which may be fatal. Bernutz also recommends artificial opening as soon as symptoms of hectic fever have succeeded the accidents of acute pelvic peritonitis.

Aran on the contrary thinks that pelvic abscesses should seldom be opened artificially: he says that the pus being imprisoned in a kind of cyst formed by false membranes does not spread; an artificial opening does not prevent a natural opening occurring at an unfavorable point for the evacuation of pus; hectic fever may follow the one as well as the other; lastly, the pus may possibly be absorbed and the malady be cured without any opening either natural or artificial as occurred in cases described by Aran and Marchal de Calvi. It is therefore prudent he thinks to abandon the opening of pelvic abscesses to nature. I think, however, that these reasons are exaggerated. On the one hand, the origin of abscesses should be taken into account; expectation is more indicated in those produced by pelvic peritonitis (which is usually encysted), artificial opening for those resulting from a phlegmon of the broad ligaments, as it has a tendency to spread. On the other hand, whatever be the origin, though pelvic abscesses may not always be in conditions to be opened early, as happens in other purulent collections, I think it is dangerous to wait too long. If the abscess reacts on the economy, if the presence of pus causes hectic fever, if the tumour raising the abdomen seems to adhere to it or to project towards the vagina or rectum, if the walls have become thin announcing imminent rupture, if the abscess has opened at an unfavorable point for the complete evacuation of the pus, if the urine or fæcal matter accumulates in the sac the abscess should be opened artificially.

When the abscess is subtegumentary it should be opened through the abdominal wall. When it is very superficial and points to the surface of the abdomen, and when there is reason to hope that adhesions are established between the visceral and parietal peritoneum the bistoury may be used; in doubtful cases the bistoury should only be used according to the method of Graves, who reaches the peritoneum without opening it, or according to that of Bégín, who incises the parietal peritoneum without touching the tumour. As a rule, however, the use of caustics is preferable, all the more so that by arousing the vitality of the tissues and producing a salutary derivation they may exceptionally bring about the absorption of pus. In employing them the rules laid down by Récamier for the opening of liquid tumours of the liver should be observed, or those of Martin¹ for the opening of deposits of the annexes occurring after delivery, that is to say, successive applications of caustic potash should be made at the same point from without inwards. Vienna paste is better still: the scar should be incised and excised daily and a fresh application of the caustic made so that adhesions may be established all round the opening after the abscess is reached. If the opening remains fistulous too long there is no danger in cautiously trying antiseptic and iodine injections.

¹ *Mémoires de méd. et de chir. prat.*, p. 312. Paris, 1835.

Bertrand¹ cured an abscess in this way, the pus from which was evacuated by the navel after puerperal metro-peritonitis lasting for six months. We know of cases of definite cure due to pregnancy, probably owing to the compression and adhesion of the walls of the abscess. Why then not imitate nature, taking care to exercise methodic compression of the hypogastrium, after the pus has been evacuated, with Bourjeaud's belt? I have seen methodic compression do so much good in cases of iliac abscess and of enormous abscesses in the hips that I have no doubt as to the efficacy of this means when applied to the cure of pelvic abscesses. Lister's antiseptic treatment should also be carefully carried out.

When the abscess points towards the vagina or rectum it should be opened there. Opening by the vagina is easier and more favorable, and therefore should always be preferred when possible. According to Bernutz, a curved trocar can when necessary be introduced by one of the iliac fossæ passing thence into the vagina. This method has been employed by Koeberlé after ovariectomies giving rise to an accumulation of pus in the vagino-rectal *cul-de-sac*, and by Péan,² who has invented a curved trocar for perforating the posterior vaginal *cul-de-sac* from above downwards; it is introduced by a small incision in the abdominal wall above the crural arch near the border of the uterus. In such cases I have introduced a long curved trocar (such as is used in puncturing the bladder by the rectum in men) behind the uterus, by means of which I have perforated the retro-uterine *cul-de-sac* and passed a drainage tube into the wound. In such cases caustics cannot be used; the bistoury is introduced with or without the speculum to the dependent part, or to the most projecting portion of the tumour. When Fergusson's speculum cannot be used Sims's should be tried, or the labia and vaginal walls may be kept apart by the fingers of assistants or by the instruments invented by Jobert for the operation of vesico-vaginal fistula. Récamier used a pharyngotome or a silver bistoury.³ Blandin's or any other concealed bistoury can be employed. However an ordinary straight bistoury will serve the purpose; its blade should be covered with linen or diachylon plaster to within half an inch of the point and introduced flat on the index finger till the most projecting and resistant portion of the tumour is reached and pierced, moderate pressure being used till we feel that resistance has been overcome and that pus is being discharged. Large openings should not be made for fear of hæmorrhage, for the flow of blood is often considerable even when a vertical direction has been given to the incision according to Récamier's advice. The best instrument of all is the fine aspirator trocar; it is introduced like the bistoury on the index finger of the left hand; we make sure that it has entered the cavity of the abscess by withdrawing the stylet, and if the pus is not discharged easily the opening is enlarged. Usually there is not much

¹ *Bulletin de la Société de méd. de Besançon*, 1858.—*Gazette méd. de Paris*, 1860; p. 430.

² *Ovariectomie et splénotomie*, p. 21. Paris, 1869.

³ H. Bourdon, *Mém. cit.*, p. 71.

pus, and it is quite exceptional for the sac to fill again and again and to persist in the fistulous state. Hence the uselessness of a second puncture; it would be better to discover the purulent collections of the ovary and Fallopian tube, which are situated frequently in the centre of the abscess, and evacuate their contents; unfortunately it is very difficult. After puncture it is unnecessary to leave the cannula of the trocar in the opening; or even to introduce a gum-elastic sound as Laugier did after puncturing a peri-uterine hematocoele, or a tent, because there is not always pus to be discharged, and all these foreign bodies touch the peritoneum and consequently may become very dangerous.

After puncture perfect rest should be enjoined and emollient enemata and cataplasms prescribed. That improvement may be lasting inflammation must be entirely extinguished: many cures are then obtained, as mentioned by Bourdon in his paper. A strict diet, however, should not be enforced for long. On the contrary, tonics, bitters, quinine and iron should be given. Lastly, we hold ourselves in readiness for the approaching monthly period when there will be a recurrence of pelvic pain and inflammation.

OF LEUCORRHŒA IN GENERAL AND UTERINE CATARRH IN PARTICULAR

Leucorrhœa is a pathological discharge produced by the increase and alteration of the normal secretions of the genital economy. This name, which literally means white discharge (*λευκός* white, *ρεῖν* to flow), is commonly used to denote all discharges except that of blood, depending on diseases of various nature, excreted by different organs, being less a special malady than a symptom common to several diseases. The progress of medicine with regard to this has been checked for long by a feeling of modesty on the part of women; for a great number refrain from telling their physician of these discharges, whilst others inform him of the fact, but refuse to submit to an examination. Now there is as much difference between the various kinds of white discharges as there is between various kinds of expectoration.

We shall give the name of *false leucorrhœa* to fluid discharges of various kinds issuing from the genital organs, reserving that of *leucorrhœa* to those produced directly by these organs under the influence of a very characteristic pathological condition.

I. *False leucorrhœa*.—This may be occasioned by the presence of foreign bodies or by the development of more or less serious organic lesions. A foreign body, such as a pessary, remaining in the vagina or in the uterus produces inflammation, hypersecretion and suppuration, retaining purulent fluids which in decomposing exhale a penetrating odour of acid fermentation. Hydatidiform or fleshy moles, polypi, fibroid tumours, produce discharges resulting from the irrita-

tion produced by their presence on the uterine mucous membrane and especially on its glands. Abscesses of the uterus or extensive sup-puration of the whole internal surface of the organ may determine the intermittent or continuous discharge of quantities of pus, which are seen in such cases to issue from the uterine cavity itself. Ashwell has seen half a pint of pus discharged from this cavity, and Safford-Lee once saw an abundant purulent discharge produced by the presence of a polypus (referred to by Graily Hewitt, p. 86). Matthews Duncan¹ describes the case of an old woman who had ceased to menstruate, and who had a considerable discharge of pus from the uterine cavity; I have seen a similar case; and another in which an interstitial abscess opened on the anterior lip of the cervix. Uterine tuberculation, which however is rare, may also determine an aqueous, dirty yellow or pale brown discharge. Cancer produces a serous or sero-sanguineous discharge like reddish water, sometimes acrid and irritating to the sub-jacent tissues, seldom inodorous, usually fœtid. Lastly, the evacuation of an ovarian cyst by the Fallopian tube may cause a discharge which may be confounded with leucorrhœa.

II. *Leucorrhœa properly so called*.—Leucorrhœa, like the white discharges just enumerated, is usually symptomatic; indeed it is only by an abuse of language that leucorrhœa can be called idiopathic. Nevertheless I think it is well to keep the name and give the pathological description of leucorrhœa for several reasons. The first is the interest presented by leucorrhœa in uterine semeiology. The second is the importance of this symptom with regard to indications. In order to judge of the existence, intensity, seat and nature of leucorrhœa, we must first of all learn to recognise the *leucorrhœal products*.

The *normal secretions* of the vulva, vagina and uterus differ from each other just as do the membranes from which they are produced.

Vulval mucus is viscous, slightly adherent to the fingers when touched, becoming thready when the latter are slightly separated. That of the vulvo-vaginal glands resembles greatly that of Cowper's glands in man. It gives an acid reaction. The mucus of the vestibular and peri-urethral follicles has always seemed to me more acid than that of the vulvo-vaginal glands. When mixed with the sebaceous secretion it often forms a kind of magma with a cheesy smell or rather a smell of sour and fermented cheese. Sometimes, although in immediate contact, the two products do not mix.

The *vaginal fluid*, to which the name of mucus should perhaps not be given, cannot apparently be produced in such abundance as the mucus of the vulva and uterus, at least not in the normal condition. It is a clear, transparent, serous fluid, having no viscosity, but seldom seen alone, for apparently it is only the vehicle of innumerable broad, lamelliform corpuscles which are detached continuously by exfoliation and in more or less considerable quantity from the surface of the mucous membrane, giving to the excretion the white, opaque, cheesy aspect which characterises it. The vaginal excretion therefore is in

¹ *Edin. Med. Journal*, March, 1868.

fact, as described by Donné,¹ a thick creamy fluid, never glutinous like that from the uterus, acid and containing cells of pavement epithelium four or five hundredths of a millimetre in diameter. This mucus is acid, whilst that from the uterus is alkaline; both contain globules of pus in proportion as the mucus is diseased; their colour is more or less modified according to the quantity of these anatomical elements.

The uterine mucus is quite different from the vaginal fluid. It is more like vulval mucus, although distinguished from the latter by its physical characters and by its mode of excretion. We must, however, remember that the name uterine mucus includes two very different kinds of mucus: that of the cervix and that of the fundus. Both are limpid normally, and the secretion is so scanty when the organ is at



FIG. 329.—Vaginal pavement epithelium covering the mucous membrane of the cervix. 240 diameters (Tyler Smith).

rest that when examining with the speculum a woman whose uterus is normal not only is there no discharge to be seen, but not even a single drop can be forced to exude by pressing the cervix with the instrument. Both may appear at the uterine orifice in the form of a drop of thin transparent fluid spreading from the orifice to the lower lip of the cervix, increasing in quantity by pressure, but remaining adherent to the organ, from which there is usually some difficulty in detaching it entirely even by wiping with cotton-wool. In this mixed fluid there is usually more mucus from the cervix than from the fundus; but the mixture may be so equal that it is difficult to distinguish them. Sometimes their different characteristics are recognised at once by the absence of one or other secretion; sometimes the cervix is obstructed by its own secretion; sometimes it does not apparently secrete mucus, but after the sound has been used a fluid is seen to exude which really comes from the body, or the hollow sound brings with it a portion of this fluid, the special characters of which may then be distinguished. Both are transparent and limpid, and if, as some observers affirm, that of the cervix is yellowish and that of the body semi-transparent and greyish, it is owing I think to some slight disorder of the secretion. I

¹ *Cours de microscopie complémentaire des études médicales*, p. 155. Paris, 1844.

have never observed such differences in the normal state. Both have a peculiar stale odour, which may be strong in different diseases and after delivery or puerperal fever, but which is never acid; both, on

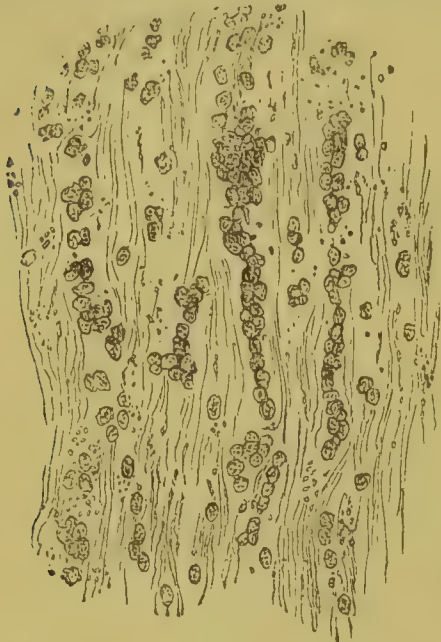


FIG. 330.—Normal mucous secretion from the cervix, extracted from its mucous follicles. The mucous corpuscles are ranged in longitudinal series owing to the viscosity of the fluid in which they are entangled. 220 diameters (Tyler Smith).

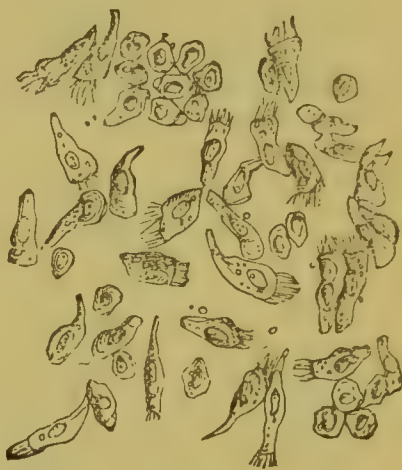


FIG. 331.—Cylindrical epithelium with vibratile cilia from the cavity of the body of the uterus. 220 diameters (Tyler Smith).

the contrary, are always alkaline. As to their distinguishing characteristics, that of the cervix is gluey, tenacious, half solid rather than liquid; hypersecretion of it is frequent; mucous corpuscles, cells of nucleated epithelium, are more or less abundant in the transparent and granular fluid. During pregnancy it is produced in considerable quantity, and is then more glutinous, more tenacious still than in the state of vacuity, and it plugs the cervix (*bouchon gélatineux*). It does not hold any other anatomical element in suspension except the nucleated cells; it is entirely homogeneous. That from the body is viscous, less tenacious than that from the cervix; it contains numerous epithelial globules, ovoid nuclei, coming from the flexuous follicles of the mucous membrane, prismatic epithelial cells or cylindrical and vibratile cells from the surface of this mucous membrane, sometimes granular bodies of inflammation. The relatively large number of these solid elements mixed with the secreted fluid sometimes alters its transparency, giving it the grey tint of which I have just spoken. This distinction is all the more important as uterine leucorrhœa is often limited to the cervical mucous membrane.

To sum up, this mucous surface, which was long regarded as identical in all its parts, secretes mucus, the physical and chemical

characters of which are very different. If these differences have not been observed sooner, it is because the speculum has only been used during the last fifty years, because the utero-vaginal secretions were often altered or mixed in cases where the introduction of the speculum would have allowed them to be distinguished, because the attention of the physician was not directed to searching for differences between fluids coming from mucous membranes the anatomical structure of which was supposed to be similar, and lastly, because in other cases in which it was a question of diseases not accompanied by discharges, or in which the genital organs, the uterus especially, were in normal health, secretions were not observed.

III. *Idiopathic leucorrhœa* is an abnormal discharge from the mucous membranes of the genitals, more especially from the uterus; it is mucous or muco-purulent, *favoured by general atony and by a local predisposition, and finally determined by a slight irritation of the secreting membrane or by a functional imperfection, such as chlorosis.* It constitutes a special morbid condition or an essential malady, the same as any other fluxion such as diarrhœa, bronchorrhœa, urethral blennorrhœa, sialorrhœa, profuse sweating, &c. Amongst other conditions of general atony which predispose to leucorrhœa, we may mention age, temperament, constitution, climate, food, &c. It is difficult, however, to appreciate the influence of these various causes. It is said that feeble constitutions and lymphatic temperaments are subject to leucorrhœa, which I think is true in spite of the contrary assertion made by some pathologists who have probably observed cases of simultaneous blennorrhagia, vaginitis and leucorrhœa in prostitutes, and who have made these the basis of their statistics. I think it is more commonly met with in young women than in old; I have seen it in girls after the appearance of the catamenia. Cold and damp climates also predispose to it. It has been said that warm climates relax the vessels and prepare the way for fluxions and hæmorrhages, but as a matter of fact it has been proved that damp countries, such as Belgium, Holland, and the marshy districts of England do so much more.¹ According to statistics made in Paris by Marc-Despine, and in Marseilles by Girard, two thirds of the women in Paris suffer from leucorrhœa, whilst only one fourth of the Marseilles women do.² Residence in towns is generally considered as favorable to leucorrhœa, and this opinion is confirmed by the researches made by Briere de Boismont.³ Lastly, a poor diet is one of the most powerfully predisposing causes; it is on this account that the use of coffee has been blamed, but wrongly so, for when pure it is very wholesome. To these causes of general debility we may add the more special ones which act in the same direction: prolonged lactation in weak nurses, cardiac disease, chronic pulmonary disease, emphysema, tendency to

¹ Graily Hewitt, op. cit., p. 89.

² Marc Despine, *Recherches anatomiques sur quelques points de l'histoire de la leucorrhée*, in *Archives générales de médecine*, 2^e series, t. x, p. 165. Paris, 1836.

³ *De la menstruation considérée dans ses rapports physiologiques et pathologiques*, ch. xiii, *Des flueurs blanches*, p. 259. Paris, 1842.

phthisis and phthisis itself, lastly the various diatheses of which leucorrhœa is not always symptomatic but which prepare the organism for it by the debility into which they throw it. To this I think we may add a local predisposition, consisting in a special atony of the genital economy or of one of its organs. I have often observed that leucorrhœic women were pale, flabby, the vulvo-vaginal mucous membrane being very extensible, the follicular or glandular orifices open, that there were symptoms of passive hyperæmia, prolapsus or flexion of the uterus, relaxation of its ligaments, frequent involuntary excretion of urine caused by laughter or some other effort, sometimes even nocturnal incontinence of urine. In women who have these predispositions, leucorrhœa may be determined by two causes of different kinds which it is important to diagnose in order to seize the indications of treatment. Sometimes a slight local irritation suffices to produce the discharge which is afterwards kept up all the more easily because the patient is in a sense prepared for it. Venereal excitement, excessive coitus, menstruation, pregnancy, abortion, delivery are the most common causes. These same causes acting energetically and continuously may produce inflammation of the vulva, vagina or uterus; but usually their action is limited to the production of leucorrhœa. The approach of puberty, the slight excitement which precedes and follows every monthly period, are often marked by the whites. Pregnancy, under the influence of the fluxion and congestion which it keeps up in the genital mucous membrane often develops vaginal leucorrhœa. The simple congestion which it may leave in the organs, the slow retrograde evolution of the uterus, are often the starting-point of a leucorrhœic fluxion which may be prolonged indefinitely.

Sometimes a functional imperfection of the uterus or the reaction on this organ of the functional disorder of another organ may be the origin of leucorrhœa. In chlorotic and amenorrhœic girls it seems that from some alteration of the blood such as general debility or atony of the sanguineous vessels of the uterus, the periodical fluxion of this organ is insufficient to produce hæmorrhage; it terminates in a simple mucous, sero-mucous, muco-sanguineous or muco-purulent fluxion. This discharge sometimes only appears at the monthly period, sometimes it is repeated in the interval. At other times it is continuous but usually increases at the time corresponding to the monthly period, decreasing afterwards. I have often seen all these varieties. This discharge sometimes undoubtedly contains globules of pus, indicative of a slight irritation of the surface of the mucous membrane or its follicles; at other times it contains globules of blood which seem to signify a tendency to the accomplishment of the natural hæmorrhage, or to the recurrence of the normal conditions of the function; frequently it is sero-mucous as if serum exuded from the vessels was mixed with mucus hyper-secreted under the influence of the fluxion of which the follicles with all the rest of the uterine system are the termination. The reaction exercised on the uterus by the functional disorder of another organ may also cause uterine leucorrhœa. The suppression of a physiological or pathological function such as lactation, perspiration, expectoration,

diarrhœa, hæmorrhoids, an exutory, &c., may originate it, or the suppression of menstruation itself. This kind of leucorrhœa has been designated by the terms *metastatic* or *supplementary*; but in these cases it is still more difficult than in those of amenorrhœa to discover the true pathogeny of leucorrhœa and to decide whether it is really supplementary of the fluxion the suppression of which coincides with its appearance, or if it is, like these fluxes themselves, symptomatic of a common general condition which causes both.

Lastly, leucorrhœa often exists in women who do not menstruate. Now, when the menses are absent leucorrhœa may be produced in two ways: like amenorrhœa it may either be symptomatic of a general state which dominates both, or it appears or is increased at the time corresponding with that of the menses by the fluxion and congestion which characterise this period: menstruation commences; its termination by the ordinary crisis is impossible; it terminates by a mucous discharge instead of a sanguineous one. When the first monthly period has been delayed, when the menses do not reappear after an acute malady, or when they begin to disappear in the course of chronic maladies, *e. g.* in phthisical patients, the appearance and return of menstruation are often announced for some months by a periodical leucorrhœic discharge, which lasts like the menses for a few days, and which is the indication of a real uterine congestion insufficient to lacerate the vessels and produce hæmorrhage; this menstrual leucorrhœa, analogous to that which accompanies ovulation in some mammalia, has been exceptionally seen for several years in women who are apparently in good health, occasionally even in some who have become pregnant.

IV. *Symptomatic leucorrhœa*.—Usually leucorrhœa is only a symptom. The diseases which produce it are of various kinds and occupy different seats. These diseases may be either acute or chronic, general or local, diathetic or non-diathetic. Amongst the diathetic causes we may mention herpetic, rheumatic or scrofulous affections; amongst the local causes, sexual excitement, inflammation of the genital organs and especially of their mucous membranes, uterine catarrh, or blennorrhagia, which may affect the vulva, vagina and uterus, extending even to the ovary, and which is distinguished by its essentially contagious character.

With regard to the seat, leucorrhœa may be limited to the vulva, more frequently to the vagina or to the uterus. It may invade simultaneously the mucous membranes of these three organs; it may even extend to the Fallopian tubes and to the ovaries and produce inflammation (*see* Ovaritis). It can be distinguished on microscopic examination by the characters that I have just assigned to the various leucorrhœic products of the vulva, vagina or uterus.

Some maladies have a greater tendency than others to determine the appearance of leucorrhœa simultaneously or successively on all the mucous membranes of the genital economy, in place of limiting it to one of them. For instance *herpetic leucorrhœa* has a tendency to invade alternately, or successively, various points of the utero-vulval

mucous membrane and even of the neighbouring organs. Sometimes the uterine leucorrhœa diminishes and the vaginal increases; sometimes the latter is ameliorated, and the vulva is affected; the labia, the internal surface of the thighs and the anus are covered with eczematous or herpetic vesicles, with pustules of impetigo, or at least they are attacked by erythema; and then when these organs begin to improve the vaginal or uterine mucous membrane is affected anew. I have seen similar cases in men; herpetic diseases successively and alternately invading the scrotum, foreskin, glans, urethra, neck of the bladder, bladder, urethra and kidney. The same remarks are applicable to *virulent or contagious blennorrhagic leucorrhœa*, to *catarrhal leucorrhœa*, to *rheumatic leucorrhœa* and to *scrofulous leucorrhœa*.

A. *Vulval leucorrhœa*.—This is common in children, especially in scrofulous or herpetic girls; it coexists or alternates with crusts on the head, with impetigo, eczema, herpes. It is sometimes complicated with superficial ulceration, engorgement of the inguinal ganglia, inflammation and suppuration of these organs. It is evidently due to excessive secretion, to a herpetic eruption, to superficial ulceration caused and kept up by scrofula, as suppurative maladies of other mucous membranes usually are at this age, especially maladies of the mucous membrane of the orifices, the mucous membrane of the lips, the Schneiderian membrane, the conjunctiva, the external ear, &c. It extends rapidly to the vagina; I have seen it, however, go further; in making a post-mortem examination of a child of 12, I remember having seen the uterus and the external half of the Fallopian tubes filled and distended with epithelial *débris* forming a mass of cheesy matter.

B. *Vaginal leucorrhœa*.—This is rarely seen in children. It is very common in married women, being caused by venereal excitement, blennorrhagia, vaginitis even, or by pregnancy. Usually there is neither swelling nor heat at the vulva, but it may occur, the fluid in issuing may irritate the mucous membrane of the labia and produce erythema, or at least an inconvenient and sometimes a painful pruritus is excited. The discharge of the fluid is almost continuous, especially in pregnant women. When the hymen exists or when the vulval ring has not been dilated by frequent marital intercourse, the leucorrhœic fluid may be accumulated for some time in the vagina before being discharged, and then its issue may appear intermittent. Frequently it is milky, justifying the name of *whites*. Sometimes it is very liquid, at other times rather consistent, on account of the epithelial elements which it holds in suspension, but it is never viscous, strictly speaking, nor gluey.

C. *Uterine leucorrhœa* is very rare in children, but common in chlorotic girls and in married women before or after pregnancy; in many it is abundant before and after menstruation. It may be provoked by venereal excesses, but usually is caused and kept up by uterine disease, often by catarrh, sometimes even by inflammation or by a rheumatic, herpetic, blennorrhagic or syphilitic affection localised on the womb, or by the presence of a polypus, fibroid tumour, simple granulations, an ulcer, &c. Generally there is neither heat, nor pain

nor any other symptom of disease of the vulva, vagina or neighbouring parts. But there is frequently a feeling of weight in the pelvis, lumbar and hypogastric pains almost as commonly, with colics, especially in young girls, corresponding to the contractions by which the uterus expels the fluid; therefore the discharge is intermittent in place of being continuous. Even when the uterine orifice is large and the fluid runs out without a uterine contraction accompanied by pains, the mucus or the muco-pus is retained by its viscosity, and is only detached from the mucous membrane to which it adheres when the mass is large enough to be dragged away by its own weight. A flow of liquid then escapes from the uterus, and finally from the vagina, from time to time, of which the patient is conscious even when she has not felt any pain previously.

Differential diagnosis of the various kinds of infantile leucorrhœa.—The importance of this diagnosis from a medico-legal point of view induces me to devote a few lines to it.¹ The leucorrhœa of children may, as I have already said, attack the uterus itself; but it is more common in the vagina, and especially in the vulva, when the urethra may be affected simultaneously.

The chief symptoms which distinguish infantile leucorrhœa caused by an indecent assault (especially when blennorrhagic) from other forms

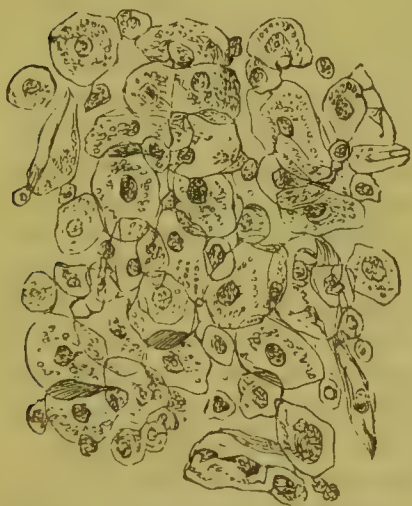


FIG. 332.—Pavement epithelium in every degree of development, in epithelial or vaginal leucorrhœa. 220 diameters (Tyler Smith).



FIG. 333.—Mucous corpuscles with some epithelial cells and oily granulations in mucous or cervical leucorrhœa. 220 diameters.

of leucorrhœa are the following: traces of contusion, swelling, ecchymosis, turgescence of the vessels of the vulva and vagina, the rapid and intense development of the malady, purulent discharge of a green-yellow hue, and abundant enough to cover the external parts and soil the linen in many places, thick enough to glue the vulval lips together

¹ See Tardieu, *Étude sur les attentats aux mœurs*, 4^e édit. Paris, 1862, p. 20 and following.

when dry, simultaneous discharge from the vagina and urethra. This last sign is important, as being peculiar to virulent and contagious leucorrhœa; for according to Tardieu, the violence exercised on the genital organs of a child by the healthiest man may produce as acute and as violent an inflammation, as well as a discharge as abundant and thick as that caused by the approach of a man affected with blennorrhagia or any other contagious disease.

V. *Uterine catarrh* is the malady which most frequently produces uterine leucorrhœa. It is sometimes confounded with inflammation of the uterine mucous membrane, and described as *internal metritis*, *mucous metritis*, *endometritis*. It sometimes assumes the acute form, frequently the chronic; it may be complicated with inflammation, erosion, ulceration of the mucous membrane, as occurs in old bronchial or intestinal catarrhs. It must not, however, be confounded with these various morbid states, or regarded as being only symptomatic of them, for it has distinctive characters which allow a differential diagnosis to be established. What characterises it is the peculiarity of its manifestation, the causes which produce it, its mode of development, the analogy of the complications, the speciality of the treatment. The speciality of its manifestation is the discharge itself. How often the uterine mucous membrane is inflamed, red, painful, even suppurating like that of the vagina without producing any discharge! How often, on the contrary, this discharge exists alone, abundant, seldom purulent, but often muco-purulent or merely mucous, the glandular hypersecretion increased, fatiguing patients by its quantity and persistence, ending by producing swelling of the mucous membrane and pain in the organ by hypertrophy of the follicles, but not accompanied by really inflammatory symptoms except in the acute state caused by a sudden attack or after a long duration from the effect of organic alterations produced by prolonged functional alteration! The external causes producing it are the same as those which usually determine localised catarrhal affections on other mucous membranes: coryza, bronchial catarrh, intestinal catarrh, &c. I have often seen leucorrhœa follow a sudden chill of the genital organs and abdomen occurring in women while perspiring, either from sitting down on the cold grass or on a damp stone, or from taking inopportunely a cold sitz-bath followed by no reaction, or from having the genitals exposed to a current of cold air. I have seen men contract vesical and prostatic catarrh from the same causes. The influence of these causes is still more marked when a number of women are affected as by an epidemic. Troussel¹ says that when the *Pont des Arts* was finished at Paris it became a fashionable promenade. Ladies sat there after sunset as in the public gardens, and owing to the cool, damp air from the river were attacked with leucorrhœa. We find proofs of the epidemic character of uterine catarrh in Blatin's work, and in the article *Leucorrhée* in the *Dictionnaire des Sciences médicales*, in which are recorded the facts observed by the Breslau physicians in 1702, by Morgagni in Italy in 1710, by

¹ *Des écoulements particuliers aux femmes*. Paris, 1842.

Bassius of Magdebourg at Halle in 1730, by Raulin¹ at Paris in 1765, by Leake in England, concurrently with catarrh and diarrhœa; the observations made at Berlin in 1712 are also given, and those in France by Roux in 1769. Its mode of development presents this peculiarity, that it often depends on a feeble constitution, on a lymphatic temperament, a susceptibility of the mucous membranes, and an impressionability to the action of damp cold and to sudden varieties of temperature, or to the hygrometric state of the air, being determined by the action of the external causes just mentioned—that is, by circumstances which beget the catarrhal affection and which produce localisation on the nasal, bronchial, vesical, intestinal mucous membranes.

Acute uterine catarrh may be complicated by a certain degree of inflammation. The mucous membrane affected by the morbid cause is first painful and the secretion is diminished. In proportion as reaction takes place hypersecretion commences, being more or less intense and more or less altered. Hypogastric pain is accompanied by heat, pelvic discomfort, pain during defecation and micturition, assuming occasionally the character of colics.

Chronic uterine catarrh follows, or this form may be assumed from the commencement; sometimes also it follows metritis, which develops in the uterine glands a tendency to hypersecretion which is favoured or prepared by a general tendency.

Subjective signs.—Hypersecretion, this discharge being apparently more weakening than that from the vagina, and sometimes, when it is abundant, coinciding with an irritation which extends from the uterine mucous membrane to that of the vagina, vulva, the internal surface of the thighs, where it produces irritation, a kind of erythema, and even slight epithelial desquamation. Menstrual disorders, usually dysmenorrhœa, occasionally metrorrhagia; in the latter case, it is seldom that there is not some alteration of the mucous membrane symptomatic of a concomitant morbid state such as ulceration, granulations, fungosities. Pains beginning at the sacrum and terminating in the groins and pubis, accompanied by colics preceding the expulsion of the mucus accumulated in the uterine cavity, and complicated with a feeling of discomfort, weight and pelvic fulness. Very often an impression on some other part of the body, such as the sudden sensation produced by laying the hand on marble, reacts on the uterus awakening a slumbering pain and determining hypersecretion with expulsion of mucus. Gastralgia is soon added to these pains, a sensation of weariness and dragging extending from the epigastrium to the dorsal region between the shoulders, resulting from derangement of the digestive functions, from the general debility which follows, from the chlorosis and chloro-anæmia which are its consequences. Dyspeptic symptoms are developed: heartburn, acidity, vomiting, abdominal distension are often followed by constipation or catarrh in the lower portion of the intestine, painful defecation, tenesmus, mucus passed with the fæces; the urine becomes muddy,

¹ *Traité des fluxus blanches avec la méthode de les guérir.* Paris, 1766.

loaded, muco-purulent, and micturition is painful. Emaciation, languor, sadness complete the picture.

Objective signs.—Tension and resistance in the hypogastrium, sensibility of the cervix; digital touch discovers a characteristic glairy or purulent mucus; there is often flaccidity of the uterine walls, sometimes increased size of the neck or body; the latter becomes globular, especially when by occlusion of the orifices from the swelling of the mucous membrane or by their obliteration from the formation of bands or the adhesion of ulcerated surfaces, the products of secretion are accumulated and retained in the uterine cavity. The hollow uterine sound penetrates with some difficulty; but when once it has done so, it is mobile in every direction, showing an increased capacity of the cavity of the womb; sometimes mucus is discharged from its canal. Frequent exuberations are observed on the cervix, even on the border of the orifice and particularly on the inferior lip, a phenomenon which may depend on maceration of the epithelium by the mucous secretion as Gosselin has remarked,¹ but which may also exist as a complication, as in more serious alterations such as granulations, fungosities, and follicular cysts. I agree with Scanzoni² that persistent leucorrhœa, like uterine congestion which often accompanies it, may, by the irritation and hyperæmia which it keeps up in the organ, favour the development of chronic metritis, ulcerations, granulations, uterine fungosities, follicular cysts, fibroid bodies, &c. Catarrhal leucorrhœa is rarer in the vagina than in the uterus; but may manifest itself in the former organ, succeeding vaginitis; it may, especially in the acute form, exist simultaneously in both. It is the same with *rheumatic leucorrhœa* which scarcely differs from catarrhal leucorrhœa: but usually rheumatism affects the muscular tissue rather than the mucous membrane of the uterus.

VI. *Hydrorrhœa. Hydrometria. Physometria.*³—This is the occasion to say a few words on these rare morbid states, the existence of which has often been doubted. Hydrorrhœa is the abundant discharge of an aqueous fluid from the uterine os; hydrometria, the tumour formed by the retention of this fluid in the uterus; physometria, the distension of the uterus by gases.

Apart from amniotic dropsy, the results of abnormal pregnancy,

¹ *De la valeur symptomatique des ulcérations du col utérin* (Archiv. génér. de méd., 4^e série, t. ii, p. 129, 1815).

² Op. cit., p. 175.

³ Lafosse, *Thèses de Strasbourg*, 1816, No. 39.—Tessier of Lyons, *De l'Hydropisie et de la Tympanite utérines hors de l'état de gestation* (Gaz. méd. de Paris, p. 8, 1841).—Jobert, *De l'Hydropisie du col utérin* (Journ. de Chir., t. i, p. 265. Paris, 1843).—P. Franck, *Traité de méd. prat.*, t. ii, p. 20. Paris, 1842.—Bonet, *Sepulchretum*, L. iii, sect. xxi, obs. 55.

Consult also for *Hydrometria*: Dard, *Gazette médicale de Paris*, 1855, p. 44; Shanks, *Id.*, 1855, p. 178; and a case in the *Gazette hebdomadaire*, 1855, p. 411; Malicheis, *Gazette des Hôpitaux*, 1866, p. 323.

For *Physometria*: Roy (*Gazette médicale de Paris*, 1833, p. 629); Batten (*Id.*, 1834, p. 505); Pollet (*Id.*, 1850, p. 114); and *Canstatt's Jahresbericht*, 1849, p. 333.

moles, alterations in the dead body of a foetus, its membranes, or the placenta, the intra-uterine opening of a tubal or ovarian cyst, and the other causes of false leucorrhœa already enumerated, hydrorrhœa and hydrometria can only occur from hypersecretion of the uterine mucous membrane.¹ The fluid secreted may be altered in its quantity and quality, be discharged continuously or intermittently, be completely retained in the uterine cavity and even produce gases; these are the only direct causes to which hydrorrhœa, hydrometria and physometria can be attributed. The serous, sero-sanguinolent, sanious, ichorous discharges produced by the serious organic alterations of the mucous membrane, are sometimes considerable, but they hardly exceed the limits of the symptomatic discharges included under the name of false leucorrhœa. Idiopathic hydrometria only originates from the secretion of the uterus.

Hydrorrhœa therefore supposes an increase of the uterine secretion, accompanied usually by a diminution in the density of the secreted fluid. This diminution in density, which is common to dropsies of other organs, is caused by the precipitation of the solid elements or by an alteration in the secretion of the organ which is brought about by the distension and attenuation of the latter to the condition of a kind of fibro-serous capsule.² Hydrometria supposes the imperforation of the neck, more frequently its obliteration or its obstruction by the presence of a polypus, by a well-marked flexion or an abnormal tumefaction of the columns of the isthmus which, fitting closely into each other, close the os internum, or even by an interstitial uterine tumour or an extra-uterine one such as an ovarian cyst,³ in short, by the same causes to which we have already attributed (p. 270) retention of the menses (hematometria). It is evident that these two conditions (abundant secretion and retention of the fluid secreted) are alone favorable to the formation of a fluid collection in the uterus and to the consecutive distension of the walls of this organ. It is also evident that it is after the menopause or prolonged amenorrhœa that hydrometria must be produced; for in other conditions there would be retention of blood instead of mucus.

1. *Hydrometria* thus defined is the *uterine ascites* or *uterine dropsy* of the ancients.—The diagnosis may present some difficulty, especially when the uterus is very thin and much distended; the question is then of a differential diagnosis between hydrometria, hematometria, and pregnancy (p. 281). In every case there is amenorrhœa or at least retention of the menses. In most cases the size of the uterus does not exceed that of the same organ in the sixth month of gestation, and it only reaches these dimensions slowly. Exceptionally the fluid may pass into the Fallopian tubes, distend them gradually and find an issue into the peritoneal cavity, or it may distend the uterus to the point of causing rupture.

¹ The existence of idiopathic hydrometria has been proved by autopsies made by Cruveilhier (*Anat. patholog.*, t. ii, p. 849) and by Thompson (*Medic.-chir. Transactions*, xiii, part i, p. 170).

² Scanzoni, *op. cit.*, p. 196.

Puncture of the uterus through the hypogastrium¹ may be necessitated, or better still puncture of the cervix from the vagina,² dilatation of the cervico-uterine canal, suppression of the obstacle preventing the discharge of the accumulated fluid, all these methods being followed up with great care to keep the uterus open by means of a sound or tents, to make detersive and afterwards caustic injections, to exercise methodic compression on the hypogastrium, to provoke contractions of the muscular fibres of the uterus and the gradual return of this organ to its normal dimensions.³ Cases have been described in which the fluid was discharged from the uterus by perforation due to ulceration: this evacuation may be very dangerous.⁴

When the isthmus, in place of being obliterated, is only obstructed by a temporary tumefaction, this mechanical obstacle may temporarily hinder the exit of a single drop of mucus from the uterine cavity, as the swelling of the median or one of the lateral lobes of the prostate prevents the discharge of a single drop of urine from the bladder. If this obstacle yields to the variations which menstruation, various movements and muscular contractions produce in the position or in the form of the uterus, there may be alternative retention and evacuation of serous or viscous fluids, sometimes in great quantity. I have seen five cases of this disease.⁵

2. *Physometria, pneumatosis* or *uterine tympanitis* when not merely the result of the introduction of air by the injection syringe, or when not dependent on the formation of gas produced by the decomposition of the foetus or placenta, a polypus, or a menstrual clot, may be due to the alteration of the sero-mucous fluid of hydrometria, but this is rare. It is evident that the gas always occupies the upper part of the uterus, in the region of the navel or hypogastrium, according to whether the patient is standing or lying. Percussion and succussion usually enable us to perceive the peculiar sensation as well as to hear the sound characteristic of air mixed with fluid in the uterine cavity. Lastly, the discharge of this gas may take place simultaneously with the fluid in a noisy manner.⁶ The treatment is the same as that of hydrometria.

Treatment.—Leucorrhœa, especially when acute, may, like every catarrh, be cured spontaneously. Treatment ought not, however, to be neglected on that account, for it has often a great tendency to pass into the chronic form, and chronic leucorrhœa is one of the

¹ Wirer has extracted in this way 32 lbs. of a thick fluid from the uterus of a woman of 53 years of age, who recovered (*Ann. litt. méd. étr.*, ii, 290).

² Cruveilhier has mentioned a case in which this puncture was followed by death (*Anat. path.*, i, 281).—See also Clements of Frankfort (*Gazette médicale de Strasbourg*, 1843, p. 371).

³ Fantonelli, *Hydrométrie guérie par le seigle ergoté* (*Gazette médicale de Paris*, 1837, p. 234).

⁴ Luigi (*Annali universali di medicina*. Milano, March, 1861).

⁵ Browne has described a case, quoted by Dugès and Boivin (*Op. cit.*, t. i, p. 259).

⁶ Gooch has seen a case of this kind (*Diseases of Women*, p. 241); and Scanzoni two (*op. cit.*, p. 198).

most obstinate diseases. It gradually produces disorders of the digestion, impoverishment of blood, emaciation and consumption manifested by languor, paleness of the face, alterations of the features and complexion, the whole being designated by the term *facies uterina*. The physician ought therefore to explain to the patient the necessity for prolonged treatment, not only on account of the difficulty of obtaining cure but of the frequent relapses.

Vulval leucorrhœa in children requires more immediate attention still; it ought to be cured at once to prevent the little patients from acquiring the habit of touching the genital organs with their hands, which keeps up and increases the evil and sometimes leads to masturbation. On the other hand, leucorrhœa in phthisical patients should not be treated except in the way of paying great attention to cleanliness which alleviates the pain and irritation. It plays the part of an anal fistula or artificial exutory, and its suppression sometimes aggravates the pulmonary symptoms and hastens death. Most practitioners are agreed as to this. Lagneau was strongly of this opinion, and Lisfranc also (*Clinique chirurgicale*, t. ii, p. 300), who says, "I have observed a great number of women in whom leucorrhœa diminished or suspended the progress of pulmonary phthisis, sometimes even checking it; hence the necessity for respecting leucorrhœa when there is a morbid visceral affection."

A. *Treatment of acute leucorrhœa* ought almost always to be general as well as local.

1. *General treatment* is much more important than one would be inclined to think: it is almost impossible to cure leucorrhœa without resorting to it, and in some cases it alone is sufficient. It is so in chlorotic patients when the leucorrhœa is dependent on functional disorder. In such cases injections, local applications and cauterisation may be dispensed with. What is required are sedatives, antispasmodics, tonics, iron, mineral waters and hydropathy. General treatment is usually sufficient in acute catarrhal leucorrhœa. We should remove the causes, subdue the complications, especially inflammation when it exists, by rest and emollients if not by antiphlogistics, *e. g.* by general baths, sitz-baths, tepid and sedative irrigations, enemata; avoiding chills, especially sudden changes of temperature, by wearing flannel and making dry frictions over the whole surface of the skin; and keeping up the strength by tonic but unstimulating diet. These means, however, are not always enough: sometimes we should try to bring on a crisis as in the treatment of bronchial catarrh. The skin from its great extent and the influence which it may have had in the development of the catarrh from exposure to a chill, appears the most favorable organ for the establishment of this crisis. With this aim in view *diaphoretics* are employed to promote perspiration. When leucorrhœa persists and threatens to pass into the chronic form, this diaphoretic action is transformed into *revulsion by sweating*, or irritating or serous revulsion by the use of dry or stimulating frictions over the whole surface of the body, rubefacients, epispastics, blisters, or at least frictions with croton oil, so as to obtain a miliary eruption which is covered by an

adhesive paper to spare the patient too great pain. If cutaneous revulsion is insufficient, intestinal revulsion may be added by repeated purgatives. The cure which is quickly obtained in this way should be kept up by overcoming the debility which predisposes to relapses and chronicity by administering iron, cold baths followed by frictions, residence in the country, &c.

2. *Local treatment*.—Lastly, passage to the chronic state should be prevented by the use of *local astringents*: tepid vaginal injections (tannin, coal tar, sulphate of zinc or copper, alum); inert or astringent powders like subnitrate of bismuth, alum alone or mixed with starch, applied to the vagina by insufflation or on a tampon; and by painting the vagina with a weak solution of nitrate of silver or tincture of iodine. These means, however, though heroic in chronic leucorrhœa, should be cautiously employed in the acute form.

B. *Treatment of chronic leucorrhœa*.—1. From the beginning it often affects this diathetic character, which shows the necessity of attacking it by *general treatment*. It does not necessarily follow that it has been originated by a diathesis: defective and disordered menstruation, pregnancy, abortion, delivery, physiological excitement, excesses, mechanical irritation, the sudden invasion of an acute catarrhal affection have often been its starting-point; but a diathesis, the latent existence of which had passed unobserved till then, finding in this morbid state an opportunity to become localised, is not long in replacing the occasional cause the action of which is soon exhausted; it imprints its character on the leucorrhœa and soon becomes with the alteration of tissue which is dependent on the duration of the disorder, the principal if not the only cause of its persistence. Whatever point may have been invaded by a pathological action, however limited the space on which its evolution is effected, however slight the symptoms of its presence may be, a pre-existing affection almost always takes this opportunity of ceasing to be latent; it manifests itself externally, and forms, if not the very nature of the morbid state, at least one of its most serious complications. Therefore even when not diathetic originally, leucorrhœa soon becomes so. What takes place in women in the case of leucorrhœa is similar to what occurs in men in the case of chronic discharges from the urethra and prostate. Nothing is more easily or quickly cured in a healthy man of good constitution: nothing more difficult in a catarrhal, rheumatic, gouty, herpetic or scrofulous subject. I have seen so many examples in both sexes of the difficulty of effecting a cure in such circumstances, and of the necessity of resorting to antidiathetics and restoratives, of the insufficiency of local treatment employed alone, of the success of the same treatment when preceded by general treatment, that I have no hesitation in saying that this is the true secret of the treatment and cure of these maladies. The affections which exercise most influence on the duration of leucorrhœa may be arranged as to their frequency almost in the following order: chlorosis, chloro-anæmia, catarrh and rheumatism, herpetic, scrofulous or syphilitic diathesis. Each of these is the source of a special indication, sometimes specific; in this way iron, alteratives,

iodine, mercury, arsenic, iodide of iron and cod-liver oil may be administered successfully in the treatment of leucorrhœa in children, according to the nature of the affection which keeps up this morbid condition. At the head of these means we must place restoratives, tonics, quinine, iron, residence in the country, change in the mode of life, and especially climate. I have seen striking examples of the influence of the change to a dry and warm climate from a cold and damp one.

The balsams, tar water, pills of turpentine, in leucorrhœa as in all other catarrhal diseases, act simultaneously on the base or affection and on the form or hypersecretion. I find tar water of great use and it is not repugnant to patients when mixed with seltzer water. Ergot has a more direct action on the uterus and has been employed with success. Marshall Hall,¹ Bazzoni,² recommend it in chronic leucorrhœa, one drachm boiled in eight ounces of water, half to be taken one day, the other half the next; they say that very rarely more is required. It may also be taken in powder every six hours in varying doses. It is evident that it may render great service in cases where the cavity of the uterus is the seat of the excretion, by stimulating the weakened contractility of the walls of the organ. Mineral waters are often recommended but are not always efficacious. Natural or artificial iron baths, so highly thought of by some physicians, are useful in cases of chlorotic leucorrhœa; but if another diathesis is added to the chlorotic they may be more hurtful than useful. I have even seen some chlorotic patients to whom they have done no good, whilst alkaline waters, but especially sulphur and sea bathing, have been very beneficial. In doubtful cases therefore we should try different means in place of obstinately persevering with one which, however valuable, has its limits. Sulphur baths and sea bathing are efficacious in scrofulous children. Hydropathy, however, is much more generally useful. In chronic uterine catarrh cold water employed in various ways with the graduated and energetic reactions provoked by its methodic application produces wonderful results. It is the best revulsive and the best tonic and cannot be too much used in the treatment of this disease. When necessary, the douche may be preceded by a vapour bath which determines revulsion on a large surface and by abundant sweating helps to restore the functions of the skin, substituting cutaneous perspiration for the morbid flux of leucorrhœa. Only we must beware of weakening patients, and take care to follow up this medication by tonic treatment.

When vapour baths, dry frictions and hydropathy are contra-indicated, we may resort to the revulsion produced on the digestive tube by purgatives, or on the skin by epispastics. I cannot, however, recommend this kind of revulsion: patients affected with chronic leucorrhœa being generally weak and dyspeptic, the only result is increased debility and irritation. Cutaneous epispastics also sometimes

¹ *London Medic. and Phys. Journal*, vol. lxi, p. 399, 1829.

² Onodei, *Annali di medicina*, May, 1831.—Lazowski, *Revue thérapeutique du Midi*, t. v, p. 211, 1853.

irritate greatly by the pain which they cause and the rest they necessitate, especially when applied to the abdomen. Therefore I seldom use purgatives and then only at the end of acute leucorrhœa to prevent its passage to the chronic form, or during the treatment of the latter as laxatives to keep the bowels regular, increase the appetite and stimulate digestion, rather than as a revulsive on an organ which ought to be spared. Schœnbein and Aran¹ have recommended enemata containing aloes suspended in a kind of mucilage of soap and water. The results are successful in proportion to the time they are retained. One may be taken every night or every two nights till there is irritation of the rectum or anus; they should then be suspended for a few days and resumed if found useful. They are only suitable when all the congestive or inflammatory symptoms have disappeared: after all, they are very uncertain, and the same may be said of enemata of colocynth. The application of blisters to the cervix is very useful in cases of uterine leucorrhœa especially when it is the body of the uterus that is affected, when there is no discharge from the vulva and vagina and when the cervix is almost healthy, merely engorged or at least when it is not the principal seat of the discharge. The blister is applied according to the rules previously laid down.

One blister is not enough, it is almost always necessary to apply a second, third, and sometimes even a fourth at intervals of a fortnight, taking care to prevent inflammation by rest, the use of baths and emollients, continuing general treatment as much as possible. It is needless to say that blisters should not be applied at the monthly period. I have found them very useful when circumstances prevented the use of hydropathy and mineral waters. Simultaneously, I recommend the abdomen to be wrapped in cotton wool with an india-rubber bandage over it so as to keep up constant moist heat.

2. We have now come to the *local treatment* of chronic leucorrhœa. This should frequently be associated with general treatment; but with the exception of simple irrigations or emollient and detersive injections to promote cleanliness and alleviate pain, topical applications should generally be confined to the last stage, when the constitution is sufficiently modified to give us reason to hope that energetic local action may put a stop to the discharge.

For *vulval and vaginal leucorrhœa* these local applications are: injections, powders and various applications. Their object is to modify directly the surface of the mucous membrane and the cavity of the follicles which are the seat of leucorrhœal discharge, in fact the local morbid state, which seems to keep up the discharge as if by habit of hypersecretion.

The injections or rather vaginal irrigations made on the bidet with

¹ *Bulletin de thérapeutique*, t. liv, p. 193. *Maladies de l'utérus*, p. 464. The prescription is: Aloes gr. lxxv; Saponis gr. lxxv; Aq. ferventis ℥iij; to be injected at bedtime when cold, after having emptied the intestine by a tepid enema.

the hydroclyse should usually be tonic, astringent and caustic. They are sometimes made with the mineral water itself during the bath, whether emollient, alkaline, iron or sulphur. After having injected pure water into the vagina for a few minutes, a solution of coal tar may be used, or a decoction of walnut-leaves, tannin, or oak bark, or a solution of alum (ʒj to a quart of water), sulphate of zinc (same strength), sulphate of copper (30 grains to a quart), or a very weak solution of salicylate of soda. Instead of injections it has been proposed to apply astringents or slight caustics in the form of ointments or powders. The action of ointments is uncertain, and the presence of grease in the vagina is not favorable to the cure of leucorrhœa. It is different with powders: they absorb the fluid or are gradually dissolved, and so the tissues in contact with the solution are affected continuously. The subnitrate of bismuth is the best, and the way to apply it is to powder the diseased surfaces with it through the speculum. Sometimes bags filled with inert and astringent powders are introduced, or they may be placed on a tampon of cotton wool. The latter is one of the best ways, I prefer it to soaking the pledget in an astringent or caustic solution because it acts simultaneously as an absorbent and modifier: I confess, however, that I do not much like leaving any foreign body in the vagina; but I except tampons saturated in a glycerole of tannin (gr. 30 to ʒij of tannin to glycerine ʒj). The solubility of tannin in glycerine, and the absorption of the glycerine by the vaginal mucous membrane render this application, which was first suggested by Demarquay,¹ very efficacious. After cleansing the vagina thoroughly introduce a large tampon wrung out of hot water and then saturated with the glycerole and repeat every two or three days. It is better still to pour one or two spoonfuls of this glycerole into the vagina through a Fergusson's speculum and afterwards introduce a tampon of dry cotton wool which the patient can remove the next morning and then make a vaginal injection. It is still easier to modify the mucous membrane by painting with a brush. A solution of tincture of iodine (1 in 5, 10 or 20) may be used, or tannin or glycerole of tannin of the same strength, or peroxychloride of iron or a solution of nitrate of silver (1 in 30, 20 or 15) applied every two days.

The same medication is applicable to *uterine leucorrhœa*; only it is more difficult to apply caustic to this mucous membrane and to make it penetrate into the follicles. The following method is the best: in the first place the mucus must be expelled from the uterine cavity. To do this I compress the cervix with the speculum, and sometimes the body simultaneously by abdominal palpation; or I direct a small douche on the cervix; or after having used the sound to ascertain the direction of the cervico-uterine canal, I introduce a fine brush or inject tepid water by means of a hollow sound, continuing to do so sufficiently long to let the cavity be thoroughly cleansed, *i. e.* if the orifice is large enough to allow the water to pass back into the vagina. If

¹ *De la Glycérine et de ses applications à la médecine et à la chirurgie.* Paris, 1863.

the os is not large enough it must first of all be enlarged. The os and cervical canal should be sufficiently enlarged to expose the mucous membrane of the cervix. We are then sure of reaching the sources of the leucorrhœic secretion with the caustic. After these preliminary preparations I introduce a brush covered with caustic into the cavity of the organ turning it in various directions so as to reach the whole surface.

When the leucorrhœa is situated *in the cervical portion* and is of sufficiently long standing to have produced hypertrophy of the cervical glands more must be done: in such circumstances we cannot dilate the mucous membrane sufficiently nor cleanse it thoroughly, nor yet reach the follicles and excretory canals of the rugged surface (Fig. 334) with the caustic. I therefore have recourse to a small preliminary operation which I often employ in the treatment of follicular granulations of the tonsils, palate and pharynx: I make numerous scarifications in various directions over the whole of this rough surface, either with an ordinary scarificator, a narrow convex or concave tenotome knife, or with a small lancet. I wait till the slight hæmorrhage is arrested: I then wash the cervix with very hot water to stop the hæmorrhage and to cleanse the surface of the cavity, after which I apply a caustic solution. If these caustic solutions are insufficient, or if the leucorrhœa is complicated by ulcerations, granulations or an engorgement of the neck, I substitute the solid caustic or even the actual cautery (a fine cautery like the bill of a bird or a knife), which I apply in various directions in the most tumefied portion of the cervical mucous membrane, taking care to protect the other portions by Récamier's large curette, to prevent vicious cicatrices which contract and obliterate the cervix when the cauterisation has affected the whole periphery of the cervical cavity (lamentable cases of which I have seen).

Huguier¹ was the first to recommend making scarifications before cauterising, in order to ensure the action of the caustic on the mucous membrane of the cervix: and I can certify that it is one of the best means of curing this membrane.

The difficulty of painting the uterine cavity when the leucorrhœa is from the *mucous membrane of the body* has led to the use of caustic injections.

Fine vulcanite uterine sounds are used, or india-rubber sounds into which the small cannula of a syringe is fitted (Fig. 199, page 219). We must make sure of two things: 1, that the sound moves freely in the cervico-uterine orifice, and that the fluid when gently injected returns easily by the neck and falls into the vagina; 2, that there is no trace, I do not say of metritis, but of inflammation of the annexes, perimetritis or pelvic peritonitis. I often prefer cauterising with the solid caustic, with a brush moistened and rolled in powdered nitrate of silver applied several times to the fundus. This cauterisation when well applied is very successful. No leucorrhœa, however abundant, purulent, or chronic withstands this treatment. To sum up: the os

¹ *Gazette des Hôpitaux*, 1849.

must be large or well dilated and quite free, there must be no flexion of the body on the cervix preventing the passage of the mucus from



FIG. 334.—Transverse ramifications of the *arbor vitae* in the cervical cavity, to show the uneven surfaces of this cavity and the difficulty there is in reaching the diseased follicles in cases of leucorrhœa.

the one into the other, nor must there be any inflammation either uterine or peri-uterine, or even strong congestion of the organ; the menses should have ceased a week previously, so that the monthly congestion may have quite disappeared; lastly, a general treatment should have been followed and simple intra-uterine injections made with applications of less energetic medicaments such as tincture of iodine, iodoform or tannin, to test the sensitiveness of the mucous membrane, or to see whether these milder topics are not sufficient.

Usually I apply powdered nitrate of silver to the fundus. Unless

the os is unusually large I first dilate it with a sponge tent (Fig. 136, p. 149); then I wash it with very hot water and carbolic acid, or salicylate of soda; and then holding the cervix with tenaculum hook forceps I apply successively three or four brushes moistened in water and rolled in powdered nitrate of silver to the uterine fundus, so as to be sure that the whole surface of the mucous membrane has been reached (Fig. 201, p. 221).—Immediately afterwards the patient takes an emollient bath, making injections all the time, or she makes injections on the bidet. She should be confined to bed for a fortnight, continuing the baths and injections. When the leucorrhœa is of long standing and so abundant that this mode of cauterisation seems insufficient, I use the crayon. After having used the sound to ascertain the direction of its cavities, I introduce the crayon by means of forceps, or a porte-crayon furnished with a piston (Figs. 202, 203), leaving it in the uterine cavity by opening the forceps, or pushing the piston and then withdrawing the instrument gently.

It is needless to say that the fragment of nitrate of silver left is sometimes extremely small, and that its size should vary with the intensity of the malady and the more or less favorable conditions for applying it. A tampon saturated with salt water should be introduced into the vaginal *cul-de-sac* close to the cervix, and care be taken to prevent the development of inflammation. Immediately after the operation the pain is alleviated by general and local antispasmodics, enemata, baths and vaginal irrigations, which when necessary may be prolonged for several hours and continued till the next monthly period.

I have never seen a case of leucorrhœa withstand this treatment combined with the other means already mentioned, and I have proved by experience that it is unattended with any danger for reasons already explained (p. 224); that menstruation has become normal, that conception has taken place and has been followed by normal pregnancy and delivery.

Other gynecologists have acknowledged the usefulness of this mode of cauterisation and its innocuity when applied according to the rules I have laid down. Braun of Vienna has invented a small instrument consisting of a cannula of vulcanite furnished with a piston to precipitate the nitrate of silver into the cavity in the way I first suggested. I have also received letters from a great number of physicians telling me of the success they have obtained from the use of this means in the treatment of obstinate leucorrhœa.¹

HYPERTROPHY AND ATROPHY

In the first place, common hypertrophy must be distinguished from special hypertrophy.

1. *Common hypertrophy* affects all the elements at once, it is true

¹ Laroyenne of Lyons has also adopted this means; he uses a crayon composed of equal parts of nitrate of silver and nitrate of potash. Blanchard (*Thèses de Paris*, 1873).

uterine hypertrophy. It may be *total*, *i.e.* extending over the whole organ (body and neck); or *partial* (hypertrophy of the body, hypertrophy of the neck); or even be *limited* to one portion of the body or neck; when the body is affected, it may be limited to the anterior or posterior segment or one of the cornua, and in the neck it may be confined to the supra- or sub-vaginal portion, or to the anterior or posterior segment, and even in each of these segments, the hypertrophy may be limited to the vaginal or to the uterine portion of the one or other, to one of the cervical lips, or to one of the columns of the cervico-uterine isthmus.

2. *Special hypertrophy* or hypertrophy of the tissue affects only one or more of the histological elements of the organ. It may be *general*, *i.e.* extending over all the portions of the affected tissue (*e.g.* hypertrophy of the tissue proper, hypertrophy of the mucous membrane, hypertrophy of the vascular economy, &c.); or *local*, *i.e.* limited as to seat as well as to tissue (giving rise to fibromata, follicular polypi, vascular tumours, fungosities, granulations). Nevertheless, although this division is the exact expression of the diversity of the anatomical alterations, I think it is sufficient in practice to distinguish total from partial hypertrophy, and for the latter specially to study hypertrophy of the neck. *Partial hypertrophy* is more common than total hypertrophy, that of the cervix is more common than that of the whole uterus, that of the mucous membrane or of some special element of that membrane is more frequent still. *Special or histological hypertrophy* is more frequent than common hypertrophy. When the elements of the mucous membrane are affected, excrescences are produced known under the names of granulations, fungosities, follicular cysts, mucous polypi, vascular tumours; when the elements of the tissue proper are affected, polypi, fibroids, &c., are produced. The former having common symptoms requiring analogous treatment will be described in another chapter. The latter, which are very much localised and also often very much developed, assume the character of true organic alterations, and in this way become the source of special indications and will be studied in another section.

Here therefore I shall only describe *common hypertrophy* or *hypertrophy properly so called*, that which affects all the elements of the organ and which attacks the whole uterus or one of its two principal segments. The first is *total hypertrophy of the womb*, the second *partial hypertrophy of the cervix*.

I.—General Hypertrophy of the Womb

1. *Hypertrophy proper*.—In my lectures I have taught for a long time that *general hypertrophy* of the uterus should be admitted, and I have shown preparations in support of the opinion. I have distinguished hypertrophy not only from inflammation, congestion and fluxion which are accompanied by pain, redness, infiltration, vascular injection and general phenomena; but also from engorgement which is less consistent, from œdema which is soft, and from the irregular and hard tumefactions of commencing cancer. In general hypertrophy

the uterus preserves its normal aspect, but is more voluminous; one would say a womb belonging to a woman of colossal dimensions. Simpson has given a perfect description of this state. Hypertrophy is always an acquired condition resulting from morbid action, from an exaggeration of normal nutrition. It is a morbid increase in the size of the uterus and of the elements of its normal tissues. Real hypertrophy is *essential* or *idiopathic*, that which Scanzoni designates by the name of *primary*, which is a disease in itself requiring special treatment, the basis of which is resolvent medication. Essential hypertrophy is seldom primary, *i. e.* it is rarely developed unless a pre-existing morbid state of the uterus has brought the organ into a condition in which hypertrophy may be developed.

The two most favorable conditions for the development of hypertrophy are congestion and defective involution. When *congestion* is repeated or prolonged it introduces into the material conditions of the organ the inevitable changes always produced by hyperæmia in the organs affected by it, and in particular hypertrophy. It is in the nature of long continued hyperæmia to stimulate nutrition in the tissues which are the seat of it. Chronic inflammation may produce the same result; but it is more apt to induce engorgement or induration: something more is required to bring about hypertrophy. As to *defective involution*, it leaves the organ hypertrophied rather than produces hypertrophy: if absorption is interrupted while the normal work of nutrition continues in a uterus the retrograde evolution of which is suspended, the size of the uterus will not decrease, the thickness of its walls will be preserved, the density of its tissue and the mass of its textular elements will persist, and it will continue in this condition, *i. e.* it will be hypertrophied. In the former mode of production the hypertrophy is active, in the second it is passive.¹

It is very seldom that the whole uterus is equally hypertrophied, sometimes the mucous membrane, at other times the tissue proper is chiefly hypertrophied. Sometimes it is accompanied by enlargement of the cavity of the organ, like excentric cardiac hypertrophy; this is especially the case when a foreign body occupies this cavity. Sometimes it coincides with a relative diminution of this cavity, as in concentric hypertrophy of the heart; there is then often partial hypertrophy of the tissue proper at one or more points, *e. g.* the formation of fibroids. I have recently seen a lady who presented a case of this kind, and in whom the uterine cavity measured from 6 to 7 inches in length.

Diagnosis.—Individual differences of size and excessive congenital development must be taken into account. When the uterus is really hypertrophied the patient experiences a feeling of discomfort in the

¹ West describes one cause of uterine hypertrophy to which he attributes great importance, but which seems to me only dependent on congestion or on repeated fluxions produced by immoderate sexual excitement. The cause is not so much excessive coitus, as a voluntary imperfection in the accomplishment of this act, that is to say, copulations repeated too frequently but which are always incomplete and congest the uterus uselessly, and in which conception cannot take place.

pelvis and weight on the perinæum, without either heat or pain; there is little or no leucorrhœa, sometimes metrorrhagia, at other times amenorrhœa. Digital touch combined with palpation shows an increase in size and weight with prolapsus or deviation; examination of the cervix by speculum confirms these facts; the sound discloses an increase in the length and breadth of the uterine cavity and yet no indication of tumour either sessile or pediculated. The principal symptoms are: on the one hand those which indicate an increase of size, and on the other hand negative characters. For the organ has increased in mass and volume, the number and dimension of its constitutive elements are increased, it may even have changed its form; but its structure has not become modified, nor have its physiological or pathological properties fundamentally altered. Tillaux read a paper before the *Société de Chirurgie*,¹ describing a very interesting case of a nullipara who suffered for fifteen years from prolonged and acute menorrhagia to which she succumbed at the age of 47, and which was due to essential varicose hypertrophy of the uterus associated with fibromata. The case is very interesting from the double point of view of the size that the organ had acquired and the vascular character of the hypertrophy, and affords me an opportunity of here describing the *differential diagnosis of symptomatic and essential hypertrophy*: 1. *Symptomatic hypertrophy* (especially from a fibroma) is produced by a double influence. As a foreign body the fibroid provokes contractions for its expulsion from the uterine cavity which are unsuccessfully repeated till the womb becomes hypertrophied. The fibroid by obstructing the orifice or incompletely determining its occlusion may cause considerable menstrual retention; a portion of the contents may at first escape by overflow, but enough always remains to distend the organ or to provoke contractions; clots are expelled, but every expulsive effort is an additional cause of hypertrophy: 2. *Hypertrophy proper* does not require for its development the presence of a foreign body in the uterus. It is not so uncommon as is believed; cases of special hypertrophy, of fibromata especially, occur frequently in girls and nulliparæ. Common and total hypertrophy, although not so general, is sometimes seen. It is known by the absence of any foreign body, or any cause which could have determined frequent contractions of the uterus. In Tillaux's case the hypertrophy was idiopathic: it was common and total, having affected all the elements and the whole organ; only it was localised more strongly on three points of the tissue proper, where it gave birth to three fibromata. One of the most interesting circumstances in Tillaux's case was that of considerable periodical variations in the volume of the tumour: the enormous increase of the uterus before menstruation and the sensibly diminished size of the organ afterwards. The uterus was congested at every monthly period as if it were really pregnant. I have seen this very often though in a less degree. This great variation in size probably depends on hypertrophy of the sinuses and their enormous dilatation. It might also probably serve as an element of

¹ Meeting of the 18th November, 1868.

differential diagnosis between the hypertrophy which affects simultaneously all the organic systems of the uterus and the vascular economy exceptionally, and that of the tissue proper in particular.—Lastly, these periodical variations of size, due to the enormous congestion of the uterine vessels, ought to be distinguished from those which depend on incomplete menstrual retention. The essentially distinctive sign between these two morbid states seems to me to be the absence of muscular contractions in the former, the frequent appearance of expulsive efforts in the latter; the acute pains, the uterine colics experienced by patients in the latter case, will be distinguished easily from the continuous dull pain caused by slow and persistent congestion of the uterus.

As to the definite results of menstrual retention on uterine hypertrophy, what occurs in complete retention must be distinguished from what takes place when retention is incomplete. In the former the uterus is sometimes considerably distended, and the thickness of its walls is not developed in proportion to the capacity of its cavity; the continuous accumulation of blood which induces hæmatometria distends the organic tissue, which gradually loses its powers of contraction at the same time that its walls become attenuated. In the latter, on the contrary, the uterus, especially the muscular tissue, is always hypertrophied. The coagulated blood, the expulsion of which is difficult though not impossible, acts on the uterus as a foreign body, a fibroma, a polypus, a mole; it provokes incessant contractions, determining hypertrophy, particularly hypertrophy of the muscular tissue, and consequently considerable thickening of the uterine walls.

Treatment.—Hypertrophy is best treated by resolvent medication, including local resolvents, strictly so called, as well as caustics potential or actual; and all general means, cutaneous and intestinal revulsives, alteratives (iodine, mercury, arsenic), vapour baths, hydropathy, and *cura famis*. It must, however, be remembered that a malady like hypertrophy takes a long time to cure. The treatment is long and does not always succeed completely. Fortunately health may be restored without complete resolution of the hypertrophy. When resolution cannot be obtained we must be satisfied with palliatives, *e. g.* a pessary or perinæal pad kept in place by straps under the thighs and a belt with braces such as is used in cases of prolapsus.

2. *Arrested Involution*

I have reserved a special description for a form of hypertrophy not uncommon according to Simpson;¹ I mean hypertrophy due to the arrest of the retrograde evolution of the uterus after delivery. I have said that it is very important to recognise these two phenomena in interpreting uterine diseases. The retrograde evolution of the uterus, which has been well studied in Germany and especially in England, is effected by gradual absorption of the hypertrophied elements. This process comprises two others: a primary modification, the fatty infiltration of the hyperplastic or hypertrophic muscular fibres, or rather

² Op. cit., p. 585.

the substitution of fat for the elements of muscular fibre, which brings back this fibre to an elementary form more favorable to its absorption and to its definite disappearance; and a second act of decomposition, the successive absorption of the fibres which have undergone this fatty



FIG. 335.



FIG. 336.



FIG. 337.

FIG. 335.—Fibres of the pregnant uterus.

FIG. 336.—Fatty infiltration of muscular fibres and gradual absorption of their elements during the period of involution, *i.e.* recurrence to the state of vacuity after gestation.

FIG. 337.—Return of the muscular fibres to the size they present when the uterus is in a state of vacuity.

infiltration, and the gradual return of the organ to its histological composition and to its normal dimensions. This process, which is regressive, resorbent and retractive, is designated in England by the term *involution*. Simpson applied the term *subinvolution* to defective and *superinvolution* to excessive involution. In the former case the uterus remains partly what it was during pregnancy or after delivery: now, in the unimpregnated condition this state is one of real hypertrophy. In the latter case the uterus exceeds the limits of the normal diminution in size, becoming quite small and atrophied. The hypertrophy proceeding from defective retrograde evolution is pathological in its permanence, but physiological in its origin.

We know nothing of the causes strictly so-called which arrest regressive transformation, absorption and involution of the uterine walls. The occasional circumstances which are most favorable to the action of these essential causes are: metritis, fatigue experienced by the uterus in women who rise too soon after delivery, especially repeated pregnancies and abortions.

Diagnosis.—This malady is not very uncommon. Simpson mentions three cases, and I have seen several others that were very characteristic. It may be suspected then if, in the absence of signs of inflammation or congestion, the patient experiences after the birth of

her last child menstrual disorders, a feeling of weight and fulness in the pelvis, in short most of the rational symptoms of uterine hypertrophy. We ascertain by direct examination the absence of a distinct tumour while the volume of the uterus is increased in every direction equally, recalling the size of the uterus at the third month of gestation, the sound showing the cavity to be 9 or 10 centimetres or more.

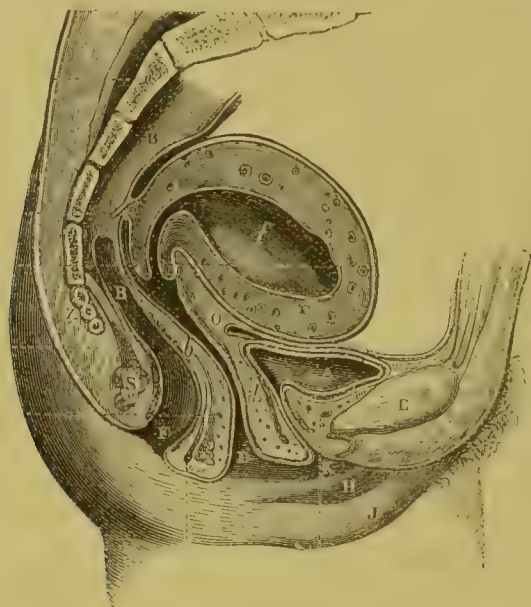


FIG. 338.—Uterus of a woman who died immediately after delivery. This figure shows the volume which the organ may preserve when involution is arrested. It is anteflexed; in other women it is sometimes retroflexed (fig. 291, p. 435).

Defective involution always coincides with softening and may be complicated by flexion, prolapsus, permanent congestion and even chronic inflammation.

There are two principal characteristics which will especially help us in making a diagnosis and in distinguishing the arrest of involution from other kinds of hypertrophy: the first is the uniform softness of the uterine tissue, combined with the wine-red colour and other characteristics of gestative congestion; the second is the extreme laxity of the ligaments and consequent tendency to prolapsus, or at least the indifference of position or direction of the uterus. This distinction is important, since the treatment of this kind of hypertrophy consists less in the use of resolvers strictly speaking than in the application of means capable of stimulating muscular contractions, and inducing involution; I have frequently seen this lead to cure in cases in which the disease (for long misunderstood) had been treated as simple congestion or chronic hypertrophic metritis.

Treatment.—Simpson recommends the use of local antiphlogistics in the acute form of arrested retrograde evolution, asserting that such treatment effects absorption; but I think he confounds hypertrophy resulting from defective evolution with the cause itself which pro-

duces it and which temporarily suspends the contraction of the organ; in fact he adds that all traces of inflammation disappear with the use of these means and that their disappearance is followed by rapid improvement.

Therefore, he adds, even if all inflammation seems to be extinguished, and when the results only remain, we often find, without knowing why, that local antiphlogistic treatment has the effect of determining absorption of the hypertrophied organ, and of finally restoring it to its normal condition. Consequently if the patient is not too weak we begin by the application of ten or twelve leeches to the vaginal portion of the cervix, or the perinæum, or round the anus. But in these cases and in the most chronic form the same effects are obtained from the application of counter-irritants to the external surface of the abdomen or sacrum, such as antimonial ointment, croton oil, tincture of iodine; but cantharides is the best stimulator of absorption especially in the chronic form of the disease and when the bladder is not irritable. A series of small blisters may be applied to the lower portion of the abdomen every two or three days till the volume of the uterus is visibly diminished. Simpson used to make them the size of a five-shilling piece and apply one every few days. Whilst absorption is stimulated by the application of counter-irritants to the cutaneous surface, the same action may be promoted by the application of mercurial ointment to the vagina, or iodide of lead, or bromide of potassium, in the form of pessaries. Local applications, however, are not sufficient; resolvents should also be administered internally. Amongst these the most efficacious are the iodide and bromide of potassium. Simpson preferred the bromide: it has this advantage over the iodide that it can be administered for a much longer time without causing marasmus; it is tonic and perhaps the best solvent in the whole pharmacopœia; it is also a sedative to the genital organs. In such cases from 3 to 7 grains may be given three times a day, indeed the dose may be raised to 90 grains a day. Sometimes patients suffering from this kind of hypertrophy are anæmic and feeble. When this is so recourse should be had to resolvents of iron, manganese and other tonic metals, either alone or associated with more specific remedies in order to improve the general health of patients by hygienic measures. Lastly, when the uterus does not respond to any indirect stimulus we may try Simpson's plan of introducing small sponge tents into the uterus or an intra-uterine pessary. We may provoke a tendency to hypertrophy in the uterus and then take advantage of the tendency of the organ to undergo molecular fatty substitution and retrograde evolution, as soon as the artificial stimulus is withdrawn, and by the use of the various resolvents already mentioned, rest, counter irritants, and bromide determine such absorption so actively, that the uterus is at last reduced to its normal dimensions. I have also found the use of ergot and electricity beneficial, as well as iron baths, sea bathing, stimulating frictions, hydropathy, &c. Simpson says that in some obstinate cases he has been obliged to repeat this treatment by irritation and artificial

hypertrophy of the organ from time to time before obtaining a complete cure.

II. *Partial Hypertrophy of the Cervix*

The hypertrophy which is limited to the cervix is characterised especially by the elongation of this portion of the organ. It has often been mistaken for prolapsus. It must not, however, be thought that this uterine displacement is always simulated by hypertrophic elongation of the cervix. Huguier, who deserves the credit of showing the mistake which had for long been made with regard to supposed procidentia, has given examples of complete prolapsus uteri without elongation of the cervix, and has published woodcuts of them.¹ On the other hand we cannot believe with Veit (*Zeitschrift f. Geburtsk.*, Bd. i, S. 144), that primary hypertrophic elongation is very rare and that this kind of hypertrophy is usually consecutive to prolapsus; it is on the contrary the hypertrophy which simulates prolapsus; hypertrophy subsequent to descent may occur, but it is very rare. Hypertrophy may affect the whole of the cervix; but usually it is limited to one or other of the two portions of this organ, sometimes to the vaginal or intra-vaginal portion situated below the insertion of the vagina, sometimes to the supra- or utero-vaginal portion, situated above this insertion and ending in the isthmus separating the cervix from the body; sometimes even it is insensibly extended to the latter. The former might be designated by the name of cervico-vaginal hypertrophy, the latter by that of cervico-uterine hypertrophy. At other times the hypertrophy is confined to one of the segments, anterior or posterior, or to one portion of this segment. These three maladies should be studied separately.

These different kinds of hypertrophy should never be confounded with cedematous elongation and prolapsus of the cervix during pregnancy, described by Guéniot,² Scarlau,³ &c.

1. *Subvaginal Hypertrophy of the Cervix*

The relative length of the two portions of the cervix (vaginal and supra-vaginal) depends in some women on the height of the vaginal insertion; but in addition to this cause, which is foreign to the cervix, there is another which exceptionally increases the projection of the cervix, so as to give it considerable length. The proof of this is that in virgins we often see the cervix (usually conical) several centimetres long. Bennet⁴ has also seen the cervix in virgins nearly 9 centimetres long, resting on the vulval orifice or even projecting below it, and asserts that the elongation may exist congenitally notwithstanding Huguier's opinion, and in spite of the great tendency of the uterus and cervix to become hypertrophied under the influence of inflammation or even of simple congestive irritation. He has seen

¹ *Mémoire sur les allongements hypertrophiques*. See the plate taken from Dupuytren's museum, Case xii, and figure 3.

² *Archives de médecine*, April, 1872.

³ *Beiträge zur Geburtsk. u. Gynäk.*, Bd. ii, Heft 1. Berlin, 1872.

⁴ *Op. cit.*, p. 10.

several cases in unmarried women when no inflammatory action of any kind could be discovered. They consulted him for prolapsus, the appearance of the cervix at the vulva having frightened them and induced them or their parents to seek medical advice. The congenital elongations which I have met with have never seemed to me to reach 9 centimetres in length. West says also that hypertrophy of the vaginal portion of the cervix is met with not only in sterile married women, but in virgins, that it may be so serious as to be mistaken for prolapsus, the cervix appearing at the vulva, and that it forms an obstacle to marital intercourse causing sterility.

More frequently hypertrophy of the cervix follows the swelling produced in the tissue of the organ by the persistence of the modifications accompanying pregnancy, and is the result of defective involution of the uterus after delivery. The hypertrophy may even be limited, in this case, to one of the cervical lips, usually to the anterior;¹

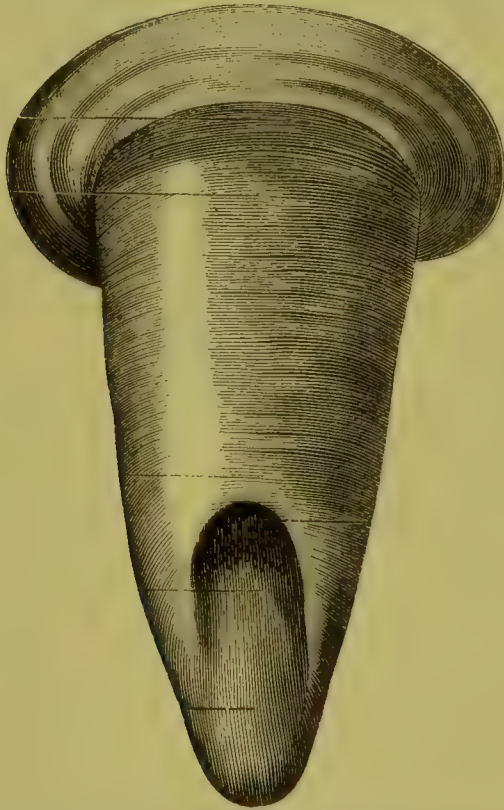


FIG. 339.—Conical hypertrophy of the sub-vaginal portion (Huguier).

as a rule also elongation and hypertrophy of the cervix follow the swelling produced in the tissue of the organ by the persistence of congestion, inflammation and frequently ulceration of the mucous membrane, which is itself the cause of the long duration of these morbid states.

Another cause requires to be added to the ulceration, congestion and

¹ Evory Kennedy, in *Dublin Medical Journal*, 1838.—Simon of Rostock has also published a remarkable example, with three drawings (*Monatsschrift für Geburtsh. u. Frauenkrankheiten*, 1864, Bd. xxiii, S. 241).

With regard to cervical hypertrophy consecutive to inflammation as well as hypertrophy of the whole organ due to defective retrograde



FIG. 341.

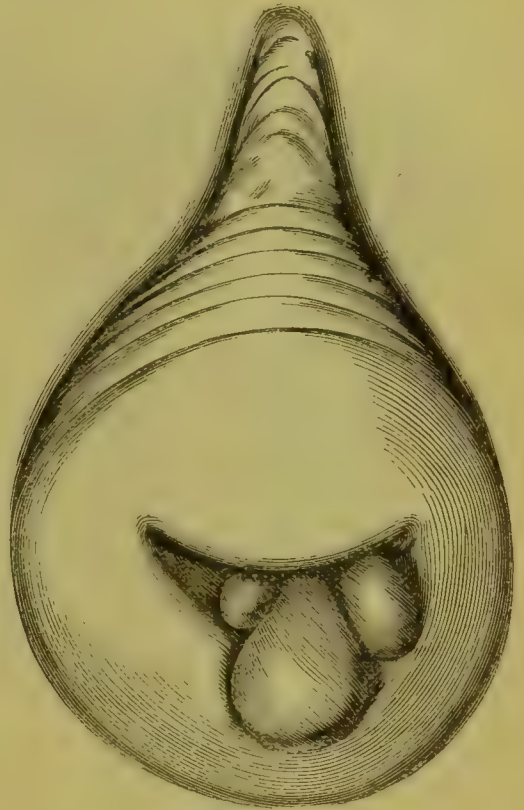


FIG. 342.

FIG. 341.—Hypertrophy of the sub-vaginal portion affecting the two lips unequally, with eversion of the lips and ectropion of the *arbor vitæ* (Huguier).

FIG. 342.—Hypertrophy and procidentia of the vaginal portion affecting both lips, which converge towards the cervical cavity; the anterior lip is more hypertrophied in its centre, the posterior in its whole extent and at its extreme points; hypertrophic polypi coming from the central column of the anterior lip (Barnes, p. 638).

evolution, we must take into account one important circumstance, viz. the time which has elapsed between a delivery or abortion and the development of inflammation; for the hypertrophic character of the malady is frequently due to this circumstance. The nearer the inflammation is to the period of delivery or abortion the more considerable the consecutive hypertrophy will be, because the organ has been seized at the time when regressive absorption had not been able to produce any effect on it. Whether hypertrophy of the cervix may or may not be dependent, like that of the whole organ, on arrested retrograde evolution consecutive to delivery, the limitation of this hypertrophy to the cervix is a favorable circumstance in the prognosis: it is always easier to dissipate cervical hypertrophy, whatever its origin be, than to bring back the hypertrophied fundus to its physiological state and to its normal dimensions.

Whether congenital or morbid, hypertrophy gives to the cervix varied and occasionally singular forms. Sometimes it is pointed and

conical below (Fig. 339), the os being at the extremity of the cone or on one of its surfaces; sometimes it is cylindrical, globular or enlarged

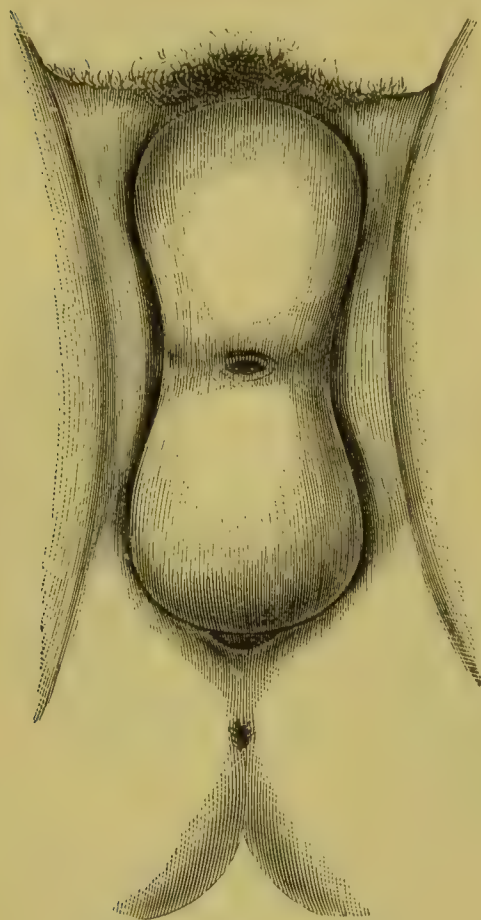


FIG. 343.—Advanced hypertrophic elongation of the sub-vaginal portion, affecting both lips equally, which diverge in escaping from the vulva (Barnes, p. 640).

at the base in the form of a club (Figs. 342, 345). Sometimes the two lips are equally hypertrophied and the utero-vaginal os is in the centre (Figs. 343, 345); sometimes they are unequally hypertrophied (Fig. 341), the os being on one or other of the surfaces, and occasionally completely hidden by the more hypertrophied lip. Lastly, when the hypertrophy has chiefly affected the external layers of the organ the borders of the orifice incline towards the cervical cavity (Figs. 340, 342); when, on the contrary, the hypertrophy has most affected the internal layers eversion of the lips takes place (Figs. 341, 343) and a kind of eversion of the os, which spreads out like a flower, allowing the mucous membrane of the cervical cavity to be seen on the two lips, either equally or unequally, according to whether the hypertrophy has attacked these two portions of the organ equally or not.¹

It is to these anomalies of form already known that we must add that prolongation of the cervical lips described by Virchow under the name of

polypus of the lips of the os.² I shall, however, have occasion to recur again to partial hypertrophy of the segments of the cervix, which deserves the serious attention of the physician on account of its connection with sterility.

Diagnosis—subjective signs.—Patients often experience a painful sensation of dragging in the loins, the iliac regions, even the abdomen, a more painful sensation still of weight in the pelvis, produced by tension of the ligaments and pressure of the cervix on the rectum, perinæum and vulva. When standing they feel as if the uterus were going to escape from the vulval opening; when lying down they feel the pressure of

¹ See the Atlas belonging to Boivin and Dugès's work and Huguier's paper.

² *Virchow's Archiv*, Bd. vii, S. 164; and *Verhandl. der Gesellsch. f. Geburtsk.* Berlin, Bd. ii, S. 205, 1847.

the organ to the right or left and a dragging when the position is changed ; when sitting another sensation is felt, that of compression

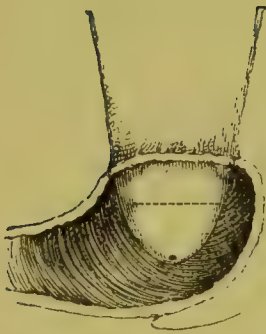


FIG. 344.—Conical congenital hypertrophy, more common than the preceding.



FIG. 345.—Acquired hypertrophy, club-shaped, also more common than the preceding.

of the tumour or of the organs situated above it by the chair on which they are seated. And if they sit down quickly in a chair they experience a shock which is felt not only in the hypertrophied organ but in the abdominal viscera ; therefore they instinctively sit down with great care.

As for the *objective signs* an idea will readily be formed of the varieties of size and form of the organ by looking over the different woodcuts representing the various kinds of cervical hypertrophy. Bennet¹ gives a characteristic sign distinguishing scirrhus indurations of the cervix from inequalities due to simple hypertrophic induration. When division of the cervix into knotty and irregular lobes results from laceration in a previous confinement and is simply inflammatory or hypertrophic, the fissures which separate the lobes radiate towards the centre of the os, which does not occur in the case of cancerous tumour.

Treatment.—I have already laid down the principal indications for the treatment of general hypertrophy of the uterus. They are the same in hypertrophic elongation of the cervix ; effect depletion of the organ when necessary, especially when there are traces of inflammation or congestion ; stimulate absorption by resolvers administered internally and externally, by mercurial preparations, iodides, bromides, &c., and by more general means still, addressed more directly to the general

¹ Op. cit., p. 90.

nutrition, such as strict diet and *régime*, sweating, hydropathy, *cura famis*.

With these general means I combine energetic local treatment, with the object of giving a new direction to the vitality of the organ, and of bringing into action the faculty of absorption which has been in some degree stifled by hypertrophy. The use of these last means is doubly indicated because cervical hypertrophy is often due to local pathological conditions consecutive to morbid states which, although they may have been general, have yet only left a limited result on the diseased part. Sometimes I make more or less deep scarifications, introducing into them perchloride of iron, or I apply the actual cautery to them; at other times I make ignipunctures at the most hypertrophied points of the organ. Paquelin's thermo-cautery and my small cauteries are the most suitable instruments for this operation (pp. 211, 216).

Unfortunately medicinal means and the various modes of cauterisation are insufficient for the treatment of serious hypertrophic elongation. Recourse must be had to excision. Congenital conoid hypertrophy does not always necessitate amputation of the cervix. Cases requiring incision must be distinguished from those requiring section. Sims (Fig. 346) has represented very exactly a normal type of rounded and truncated cervix. Let us suppose the cervix extended in the direction of the dotted line *a*, we shall then get a very common form of conical cervix which is almost always associated with constriction of the os, and almost as constantly with induration. Division of the os extending to the circular fibres will suffice to separate the lips, bring the cervix back to the form of a rounded cone, and cure dysmenorrhœa and sterility; but if the cervix extends in the direction of the dotted line *b*, simple division is not sufficient. A portion of the cervix

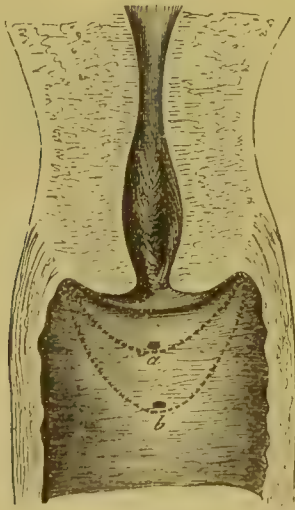


FIG. 346.—Normal cervix : *a*, cervix slightly conical ; *b*, cervix very conical (Sims).

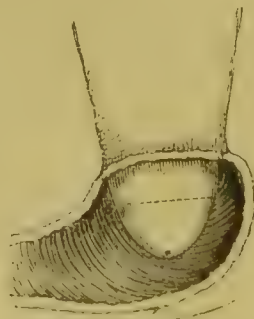


FIG. 347.—Dotted line indicating the point for section of a conical cervix (Sims).

will require to be amputated, following the transverse direction of the dotted line in fig. 347.

Acquired hypertrophy, especially club-shaped hypertrophy (Figs. 342, 345) or hypertrophy with elongation simulating procidentia, is not only a cause of dysmenorrhœa and sterility, but it cannot be cured by either simple incision or by cauterisation applied in the way I have just described. When hypertrophic elongation of the cervix gives rise to serious symptoms, and has withstood the means described, when it is of long standing, and when it has reached from 5 to 7 centimetres in length, I agree with Huguier¹ that there is only one means of effectual cure, viz. *amputation of the cervix* $\frac{1}{4}$ of an inch from the vaginal insertion.

Bennet,² although not in favour of this operation, acknowledges that it should be performed when elongation of the cervix resists all means of treatment, when it produces permanent discomfort, and is an obstacle to marital intercourse or a cause of sterility. West,³ after exaggerating the dangers from hæmorrhage and peritonitis, judging from an unfortunate case performed by Paget with the *écraseur*, admits that he knows of no other treatment for this malady except ablation of the hypertrophied portion. Scanzoni⁴ goes further in his approval of the operation; he says: "I have so often seen the inefficiency of all therapeutical means, local as well as general, that now I always perform amputation of the cervix." I also have seen sterility yield to amputation of the hypertrophied cervix. This operation is doubly desirable when elongation is complicated with a cyst, a fibrous tumour or epithelioma commencing at the lower extremity of the cervix. Huguier says, "We should have all the less hesitation in performing it in that it is an operation at once quick, easy, almost painless and generally unattended with danger,⁵ and that it relieves patients so quickly and surely of their malady." I agree with this opinion all the more willingly that I know of no other means that can be substituted for ablation of the cervix, and that there are cases in which the malady not only proves uncomfortable but



FIG. 348. — Museux's forceps for seizing the hypertrophied cervix: A, with two hooks; B, with three hooks.

¹ Op. cit., p. 23.

² Op. cit., pp. 11, 324.

³ Op. cit., p. 100.

⁴ *Lehrbuch der Krankheiten der Weiblichen Sexualorgane*. Wien. S. 76.

⁵ This operation however, like simple cauterisation, is not without danger.

painful, reacting on the whole economy and necessitating prompt and decisive intervention. The patient should lie on her back so that plenty of light is thrown on the pelvis. Sometimes the cervix projects at the vulva, in which case the labia and vaginal walls may be separated with dilators or the fingers of an assistant, to reach the point at which the amputation is to be performed. Sometimes it is hidden in the pelvic cavity: in which case it must be brought to view by means of a large bivalve speculum, or two dilators. In any case, it is best to follow Huguier's advice to amputate the cervix without using efforts to try to bring it to the vulva and without dragging on the uterine ligaments.

The cervix is then seized with a strong tenaculum hook or with Museux's forceps. It is at first drawn upwards, and then with a long-handled curved bistoury a semicircular incision is made at its lower portion, half a centimetre below the vaginal insertion. It is then drawn downwards, and the upper half of it is divided in the same

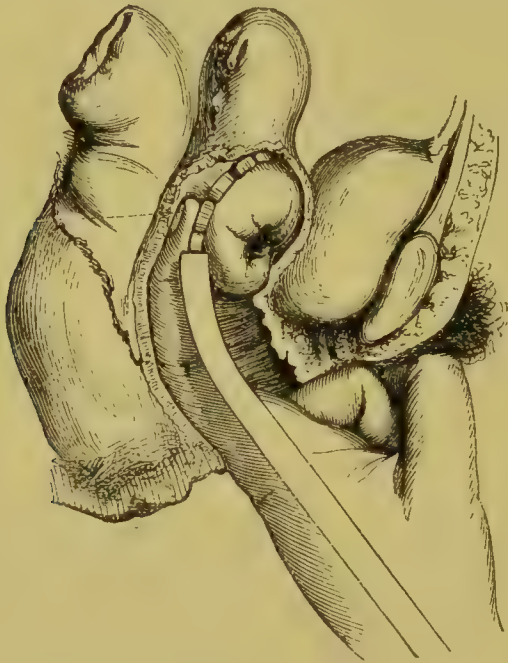


FIG. 349.—Amputation of the vaginal portion of the hypertrophied cervix with Chassaignac's linear *écraseur*.

manner. The hardness of the tissue and the difficulty of managing the bistoury, sometimes make long curved scissors preferable. I have often used them if not to commence with, at least to finish the section, so as to give it the proper regularity. In fact I prefer using the thermo-cautery or a small cautery at red-heat, to avoid hæmorrhage in

Apart from opening the peritoneum, examples of which I shall give later on, I may just refer to the case published by Greenhalgh of ablation of the cervix by the *écraseur*, followed by peritonitis and death (*Obstetrical Transactions*, vol. v, pp. 75 and 102). We should therefore be sure that there is no inflammation of the annexes or pelvic peritoneum.

forming the posterior and anterior flaps. Even when the hæmorrhage does not seem alarming at first we should pay attention to it, and not leave the patient till it has entirely ceased. Plugging the vagina is sufficient, but it should be done methodically: after having washed the cervix with cold vinegar and water or with iced water (provided that ice can be continuously applied for several days to the hypogastrium, rectum or vagina), small tampons of cotton-wool powdered with alum or saturated with tincture of perchloride of iron should be laid against the bleeding surface, then compressed and kept in place with a number of other tampons till the whole vaginal cavity is filled, when if necessary they can be retained by a T bandage. This dressing is removed the next day or the day following, care being taken to remove only the superficial tampons at first, leaving those that are in contact with the amputated portion for some time longer, and facilitating their removal by making injections to prevent any laceration which would inevitably cause a return of the hæmorrhage. All these inconveniences, however, are avoided by the use of the actual cautery.

When the base of the tumour is large and traversed by arteries the pulsations of which can be felt, when the patient is chlorotic and cannot be exposed without danger to hæmorrhage, the *écraseur* should be used. This instrument, however, has two disadvantages: the first is, that it makes the operation not only long but painful when chloroform is not used, on account of the symptoms of strangulation determined by the constriction of the chain; the second is the difficulty of placing the *écraseur* properly on the cervix alone without including a portion of the vaginal walls, and even without touching the bladder or without opening the peritoneum. Huguier mentions a case that occurred in Langenbeck's clinique, in which these two accidents both happened; the patient died the third day; a perforation of the bladder and peritoneum was discovered.¹ Therefore I have replaced the *écraseur* by the *elastic ligature*, which has all the advantages of the extemporaneous ligature and is more conveniently applied. If it is desirable to operate more quickly the *galvano-caustic wire* may be applied, which was used so successfully by Lehmann (*Nederl. Tijdschrift voor Geneesk.*, 1877, No. 7) in a case of prolapsus with elongation, in which the total length of the uterus was 16 centimetres; but Paquelin's thermo-cautery is better. We must take precautions against consecutive obliteration. I have collected six cases. In order to prevent it I commence by dissecting (with the cautery) two large flaps of mucous membrane, either antero-posterior or lateral, and apply the elastic ligature to the tissue proper at the base, where the flap is adherent, or I finish this section with Paquelin's thermo-cautery. The flaps of mucous membrane are then united to the tissue by a metallic suture, and

¹ This accident has occurred several times, after removal of the cervix by the linear *écraseur*, either on account of hypertrophy or cancer. Besides Langenbeck's patient, in whom the peritoneum was injured, according to the report made by Mayer to the Obstetrical Society of Berlin, five cases at least of this serious accident are recorded.

are sufficient afterwards to procure autoplasmic restoration of the orifice. This is, I consider, at present the best method of performing partial section of the cervix.

When there is no danger of hæmorrhage and no special indication for the use of the *écraseur*, the thermo-cautery or the elastic ligature, it is better to make a clean, transverse section of the cervix which allows of union by first intention. It is to Marion Sims that we owe this idea. In 1859 this surgeon, being about to perform section of a hypertrophied cervix, and not having an *écraseur* by him, slit the organ on both sides with scissors as far as the insertion of the vagina, excised both halves,¹ and covered the bleeding surface with the vaginal mucous membrane, as the stump of a leg is covered with the skin after circular amputation. The borders of the wound were united from before backwards with four metallic sutures, two on each side of the cervical canal. The wound healed by first intention; the sutures were removed nine or ten days afterwards. There was no other opening than the oval orifice of the cervical canal in the centre of the line of union. Since then Sims has adopted this method in his practice.² I have also employed it with success; but I prefer autoplasty of the cervix by excision of two portions of the uterine tissue, after previous dissection

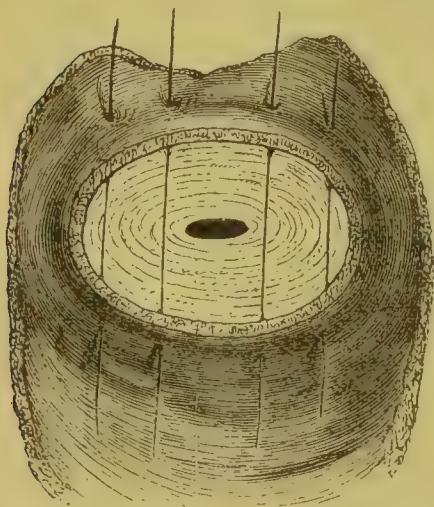


FIG. 350.—Amputation of the cervix, four metallic threads passed through the lips of the wound.

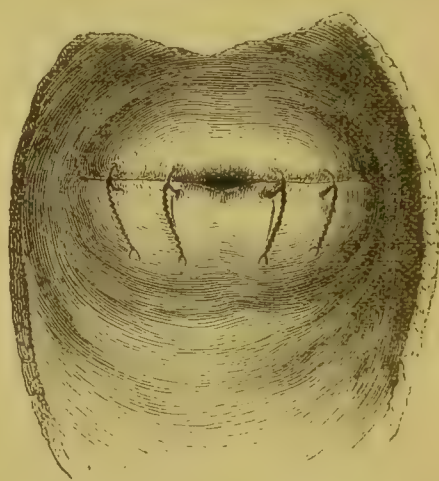


FIG. 351.—Twisted sutures, union by first intention (Sims).

of two flaps either antero-posterior or lateral according to my method, or semicircular to allow of excision of a conical portion of the tissue, according to Max Markwald's method.

¹ Later on, he adopted a kind of small guillotine for excision of the cervix (op. cit., pp. 211, 224).

² Spiegelberg has published a paper in *Archiv für Gynackol.*, Bd. v. Heft 3. Berlin, 1873 (*Ueber die Amputation des Scheidentheils der Gebärmutter*), containing unpublished cases on various modes of amputating the cervix in cases of carcinoma, hypertrophy, elongation, &c. The author prefers the method of Sims for hypertrophic elongation (Hayem, *Revue des sciences médicales*, iii, 205).

After amputation of the cervix, whether simple or by the method of Sims, even when followed by immediate union, if there is consecutive contraction of the external orifice it is better to let things take their course than prevent union of the wound by premature and inopportune dilatations. Two or three months afterwards the orifice can be enlarged by incision and dilatation, as in cases of congenital narrowness in which autoplasty is practised.

2. *Supra-vaginal Hypertrophy of the Cervix*

Hypertrophic elongation of the supra-vaginal portion of the cervix (cervico-uterine elongation) was discovered by Huguier¹ in 1849. Before the appearance of his work this elongation had been mistaken for procidentia, and although measurements had been taken both on the living and dead body by Saviard, Morgagni, Hoin, Levret, Dance, Cloquet and Cruveilhier, which proved excessive length of the supra-vaginal portion of the cervix and the presence in the pelvis of the supposed prolapsed uterus, no conclusions had been drawn from them as to the existence of cervico-uterine hypertrophy, its diagnosis or treatment.

West² refers in a few words to the existence of supra-vaginal hypertrophy. He mentions the case quoted by Morgagni³ and the description given of it by some German writers, especially by Virchow,⁴ under the name of *prolapsus of the womb without descent of the fundus*. He mentions a specimen of this kind of alteration which is in the Museum of St. Bartholomew's Hospital, series xxxii, 30. He justly remarks that the mechanical means of support and reduction, which are useful in true prolapsus, are useless here and only aggravate the sufferings of the patient.

Diagnosis—subjective signs.—The principal are the following: abnormal heat and sensibility, pain, muco-purulent hypersecretion from the uterus. Menstruation usually longer and more abundant, prolonged after the age of the menopause, sometimes accompanied by metrorrhagia. Marital intercourse often difficult or impossible, and generally sterility. Micturition frequent, painful, difficult and even impossible, unless the patient pushes the tumour backwards and upwards with her hand; for the bladder partly escapes from abdominal pressure, its walls are relaxed and weakened, and the urethra is strongly flexed at the point where it crosses the subpubic ligament and Wilson's muscle. Sometimes there is incontinence of urine, at other times retention. The clothes, the abdomen and the tumour are soiled by contact with the urine, which cannot be voided in a jet; hence itching, irritation, frequently even excoriation and ulceration of the vaginal mucous membrane, especially of that which covers the anterior surface

¹ *Mémoire sur les allongements hypertrophiques du col de l'utérus dans les affections désignées sous le nom de descente, de précipitation de cet organe, et sur leur traitement par la résection ou l'amputation de la totalité du col, suivant la variété de la maladie.* Paris, 1860.

² *Op. cit.*, pp. 144-45.

³ Morgagni, *De sedibus et Causis Morborum*, folio. Venetiis, 1761, 2nd vol., epist. 45, art. 11, p. 204.

⁴ *Verhandl. der Gesellschaft f. Geburtshülfe in Berlin*, vol. ii, p. 205, 1847.

of the tumour. There is constipation and difficulty of defecation from the retention of faecal matters at the point where the tumour projects into the rectum, patients being sometimes obliged to lift the tumour upwards and forwards, to favour the accomplishment of this act. When the

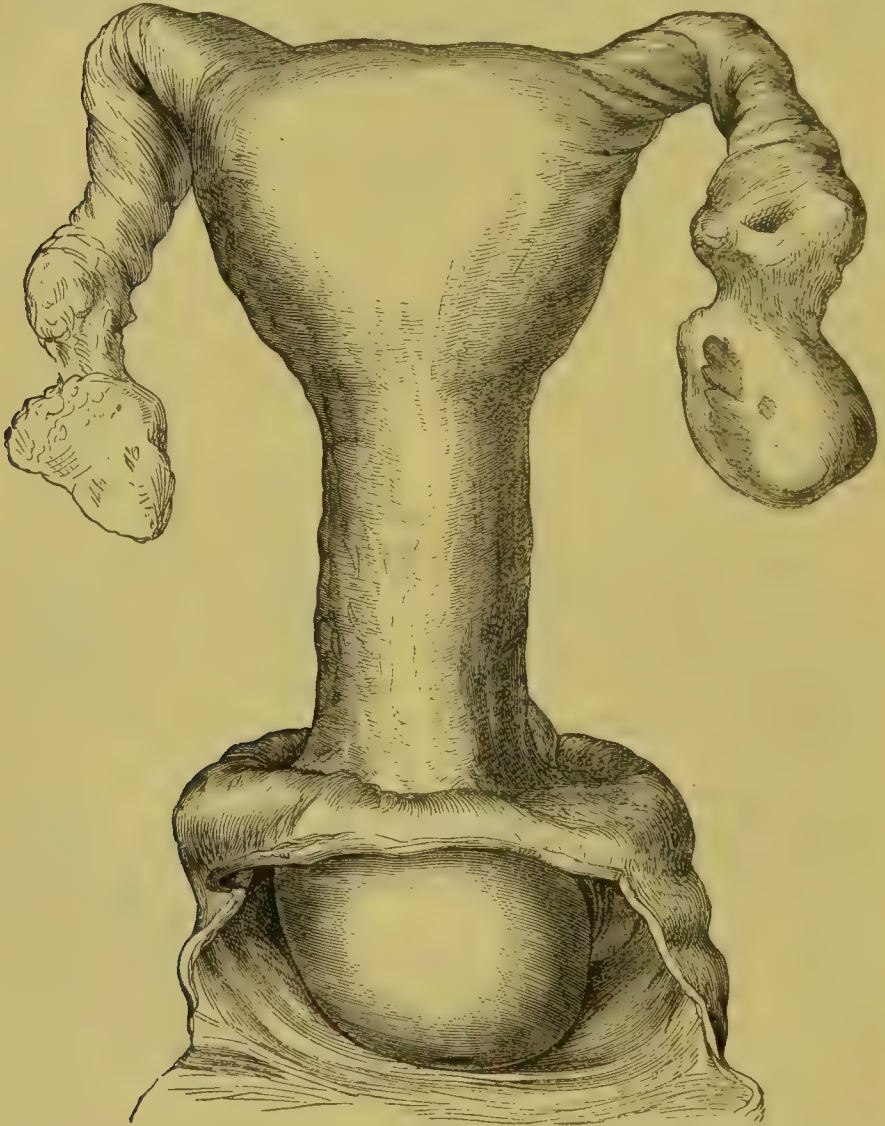


FIG. 352.—Considerable hypertrophic elongation of the supra-vaginal portion especially, but also of the sub-vaginal portion. From a preparation in St. Bartholomew's Museum. The Fallopian tubes are also diseased. The vagina contains the globular portion of the elongated cervix (Barnes).

perinæum is lacerated there is at the same time incontinence of faecal matter; in such cases there is irritation and frequently ulceration of the posterior half of the tumour.

Lastly, when the patient is obliged to walk or work, in addition to the general feeling of discomfort, there is a dread of the viscera escaping through the vulva, there being no longer any resistance from

the perinæum, and she also experiences constant pain, dragging in the lumbo-sacral region, sometimes in the hypogastrium and groins, at other



FIG. 353.—Hypertrophic elongation, principally of the supra-vaginal portion of the neck, simulating prolapsus: *f*, fundus; *i*, isthmus; *c*, cervix (from nature, after Farre).

times in the epigastrium. Every position, especially the vertical one, becomes difficult. Lastly, digestion and nutrition are disturbed.

Objective signs.—In procidentia the sound penetrates to a depth of from 6 to 7 centimetres, in elongation from 9 to 15 centimetres and exceptionally to 20. The sound also allows us to ascertain the direction of the cervico-uterine canal, the situation of the fundus, &c. Other means also allow a differential diagnosis to be established and completed by the discovery of other elements which may exist in the tumour. For instance, in hypertrophic elongation, rectal touch discovers the cervix and above that the body of the uterus; in procidentia it reveals a vacuum in the middle, and laterally two painful cords, extending from the angles of the womb and formed by the round ligaments, the ovaries and the Fallopian tubes. A sound passed into the bladder and directed towards the rectum is arrested in the middle by the hypertrophied cervix; on the contrary it may be felt by the finger placed in the rectum above and behind the uterus when the latter is merely prolapsed. Palpation of the tumour in cases of elongation discovers the presence in its centre and throughout its whole length of a hard and rather broad cylinder; while in procidentia it reveals a vacuum in the centre of its base, and below this a firm elastic body, of the form and consistency of the uterus, and continuous with the sub-vaginal portion of the cervix, which is visible externally. Lastly, attempted reduction of the tumour gives quite different results in both cases: in procidentia, the first part of reduction, that of making the body of the uterus pass through the vulva, may be painful, difficult or

impossible, especially during the menstrual period; the second part is easy, the parts seeming to go up of themselves, the patient is soothed and the uterus may be maintained by a pessary; in hypertrophic

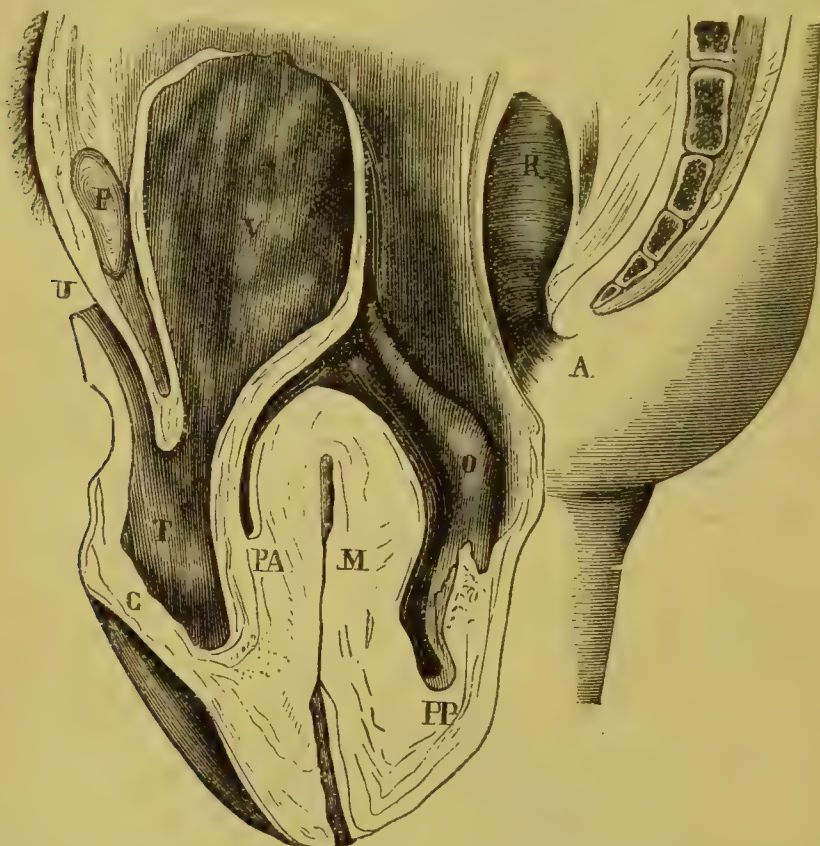


FIG. 354.—Complete procidentia, from a preparation in St. George's Museum (Barnes). PA, anterior peritoneal fossa; PP, posterior peritoneal fossa; T, cystocele; R, rectum; P, pubis; U, urethra; A, anus; O, ovary; V, bladder; M, womb.

elongation reduction is easy at any time, either before or after menstruation, the entrance of the tumour is effected without any resistance from the vulval orifice, it takes place gradually, without pain till the cervix is on a level with the lower extremity of the vagina; flat, oval, annular pessaries may then be borne with benefit; but if we wish to raise this part higher, to its normal position, we usually feel resistance, the uterus becomes curved on itself, and more or less acute pain is produced, or the body of the uterus is raised out of the pelvic into the abdominal cavity, where it causes great discomfort and even unbearable pain by its pressure on the neighbouring parts and by the tension exercised on its own ligaments. These considerations are very useful in establishing a differential diagnosis.

Treatment.—The impossibility of reducing the tumour and of maintaining it reduced in confirmed hypertrophic elongation explains how this malady, reputed to be incurable, becomes a real infirmity which only rest combined with the use of vulval bandages of various kinds

makes bearable. The discomfort attendant on micturition of which I have spoken, the contact of the urine with the tumour, the friction of the latter against the clothes, and the ulceration which follows cause such constant discomfort that the intervention of art becomes necessary. Unfortunately the means at our disposal are very incomplete, and are only successful when the malady is slight.

As for medical means, those which I have enumerated in speaking of general hypertrophy may be used; the horizontal posture with the pelvis raised, iodide of potassium, ergot, cold enemata, frictions with resolvent ointment, &c.

When the elongation is not very extensive (about 2 or 3 centimetres), when the upper extremity of the vagina only is inverted and when the whole of the tumour does not protrude more than from 4 to 5 centimetres beyond the vulva when the patient strains in a standing position, the cervix and vagina can usually be kept reduced by one of the numerous varieties of pessaries (especially Hodge's lever pessary). Unfortunately reduction cannot always be maintained for want of a *point d'appui* owing to the considerable enlargement of the transverse diameter of the vaginal opening. Their diameter must therefore be proportioned to that of the vaginal opening. I know a woman aged sixty affected with hypertrophic elongation measuring nearly 12 centimetres, mistaken till lately for a simple prolapsus; she was accustomed to reduce it by means of a large ball of linen which served as a pessary, and although suffering discomfort she is able to do a great deal of hard work in a maternity hospital. When the prolapsed parts can be raised above the vulval opening and when patients cannot tolerate any kind of pessary, we must be content with maintaining the tumour in this position by means of an oval plate supported by elastic bands, or mounted on a steel spring fixed to a belt. Unfortunately the presence and pressure of this plate can hardly be borne by women who have hard work to do; sometimes too the uterus escapes at one side of the instrument, and the contact of the latter irritates the organs and provokes secretions so that patients are obliged to lay it aside.

When these means are found insufficient, an operation should be tried.¹ This operation, which consists in removing a part or the whole of the cervix with the upper extremity of the vagina, by scooping it out from without inwards, after having previously detached the bladder from the part which is to be removed, has been suggested by Huguier under the name of *conoid amputation* of the cervix. It has been successfully performed by this surgeon and by others; I have performed it several times with equal success; and although not exempt from danger, it seems to me that it ought to be accepted as the only means of curing an infirmity which though not endangering life yet produces very great discomfort. We must not, however,

¹ I agree with Marion Sims who, while approving of Huguier's operation, says, that as a rule conoid amputation should only be made when there is hypertrophic elongation of the infra-vaginal portion of the cervix as well as procidentia and supra-vaginal hypertrophy.

forget that the most serious accidents may be developed, for they occur on the occasion of much less serious operations. Metritis or peritonitis may cause the death of patients. Peter,¹ the translator of the last edition of Bennet's *Treatise on Uterine Inflammation*, mentions an unfortunate case of the kind which he saw. The surgeon must judge of each case individually, taking into account all the indications and contra-indications.

The object of the operation is not merely to amputate the sub-vaginal portion of the cervix, but also to remove that extending between the insertions of the vagina and the body of the organ, which is the principal seat of hypertrophy. It should be performed a few days after the menstrual period, the patient having since then made very hot injections and kept the horizontal posture. The first part of the operation consists in section of the posterior walls of the vagina and cervix. The danger incurred is that of lesion of the peritoneum. To avoid it the surgeon introduces the index finger of the left hand into the rectum, pressing against the anterior wall of the intestine; this finger indicates to the eye the limit of the recto-vaginal fold of the peritoneum, and serves as a guide during the whole operation. The portion of the vagina which is inserted on the cervix is incised above this finger, whilst an assistant pushes the whole tumour upwards and forwards by means of a pair of Museux's forceps fixed in the posterior lip of the cervix. This incision is carried at first towards the cervical cavity to avoid the peritoneum, then into the uterine tissue obliquely, from below upwards, and from without inwards till the cervical cavity is reached. The second part of the operation consists in section of the anterior walls of the vagina and cervix. The chief danger incurred is injury to the bladder. To avoid it, a sound is introduced into this organ and directed downwards into the lower portion of the vesical *cul de sac* which invariably forms the anterior part of the tumour; this part is raised and rendered prominent, and the assistant to whom the sound is entrusted is told to make it perceptible to both finger and eye. The anterior lip of the cervix is seized with Museux's forceps and drawn down by an assistant; the surgeon then makes a horizontal and semi-lunar incision, convex above, at about one centimetre from the projection formed by the sound, which embraces the anterior portion of the cervix, its extremities joining those of the first incision. The anterior surface of the cervix below the bladder must only be reached by small incisions; when the operation has arrived at this point the sound is taken away; the bladder is separated by a careful dissection from the anterior portion of the cervix to an extent of from 2 to 4 centimetres in the centre, and from 40 to 50 millimetres on the sides, for fear of injuring the ureters; after which the anterior wall is divided from the cervix obliquely from below upwards and from before backwards, till the cervical cavity has been reached, as has been done for the posterior wall. The portion taken from the uterus ought to be cone-shaped, the base corresponding with the cervix, and the vagino-uterine wound funnel-shaped, the most con-

¹ Op. cit., p. 463.

tracted portion corresponding to the uterine cavity. In order to prevent hæmorrhage, especially after the operation, the arteries should be ligatured as they are opened. The uterine tissue is so dense and friable that it is very difficult for the ligatures to keep a hold of them. Huguier has invented an ingenious method of ensuring constriction: the use of hooked pins. In place of seizing the uterus with forceps or with an ordinary tenaculum hook, he uses a good strong pin in the form of a fish-hook to the head of which a long thread is attached. A ligature is made on the parts fixed by the pin, the point of which is cut at 1 millimetre from the knot, so as to prevent it from pricking and hurting the neighbouring parts. The whole is left in place and falls from the third to the fifth day. In applying the ligatures in this way as the arteries are opened time is gained, the loss of a quantity of blood is avoided, and the patient spared a subsequent hæmorrhage. When hæmorrhage continues in spite of the use of the *écraseur* and in spite of the application of tenaculum ligatures, the vagina must be plugged as after amputation of the subvaginal portion of the cervix. I have left this description unaltered because there are cases in which it is necessary to have recourse to the bistoury in order to avoid the formation of cicatricial tissue and preserve the flexibility and suppleness of the uterus, but I should add that latterly when performing this operation, especially in old women, I have used very small cauteries or Paquelin's thermo-cautery in place of the bistoury. I have also prescribed very hot injections previously as a preventive hæmostatic means, and I think the gravity of the operation is greatly diminished by their use. After section of the cervix has been performed, I push the rest of the uterus and vagina back into the pelvis, and make no other application than simple detersive vaginal injections. Cicatrization is usually completed towards the twentieth day. The upper extremity of the vagina is then retracted and punctured; it presents a reddish cicatrix nearly 2 centimetres long, at the base of which is felt a small mammillated eminence the size of a finger-tip, pierced in the centre by a small transverse opening: it is the lower part of the uterus. The womb at the end of two or three months is less voluminous and shorter than after the operation: it diminishes from 1 to $1\frac{1}{2}$ centimetres. This diminution is to be attributed to the resolution and suppuration which have followed the solution of continuity, as well as to the retraction of the cicatrix. The procidentia is then radically cured, except in cases in which there is a very wide pelvis and vulval opening, a more or less lacerated perinæum, and considerable weakening of all the soft parts which form the floor of the pelvis, and when the body of the uterus is completely prolapsed from the pelvis and in retroflexion, so that the fundus of the organ is lower than the cervix. These various circumstances contra-indicate operation, or at least give no hope for complete success.

Lastly, when the malady is preceded by a voluminous rectocele or cystocele, or by both, it may be necessary, after removal of the cervix, to operate for the herniæ of the rectum and bladder separately. The best way of operating consists in destroying on each side a circular

portion of the vaginal wall which covers them, in order to determine strong cicatricial retraction. It is important in dissecting the vaginal wall to avoid injuring the bladder and rectum. Huguier has contrived for this end an ingenious method, which he applies one or two months after conoid section of the cervix, *i. e.* when the first wound is cicatrised, the patient out of bed, and the result of the operation can be judged of. For cystocele, after having previously dilated the urethra with prepared sponge, he introduces the little finger by this canal, and if possible, the index finger of the left hand into the bladder. He seizes the tubercle and the anterior wall of the vagina with a small pair of Museux's forceps, making an assistant draw them downwards and forwards, so as to stretch them and separate them, if possible, from the corresponding wall of the bladder. Then he passes, at the base of the fold formed by the part of the vaginal wall which he wishes to remove, a long pin, or several pins crossed, for example four, forming two crosses, taking care that the pins traverse the cellular tissue lying between the vagina and bladder without touching the walls of this organ, of which he is warned by the finger introduced into the vesical cavity. He throws a loop of thread behind each cross formed by the pins, forms a pedicle of the whole with a triple thread and applies the *écraseur*. The same operation may be performed simultaneously on the posterior wall of the vagina covering the rectum, care being taken to introduce the index finger into the intestine to serve as a guide, and to preserve the wall of the organ, remembering that the upper portion of the rectocele is not only in proximity to the anterior wall of the rectum, but also with the vagino-rectal *cul-de-sac* of the peritoneum.

3. *Hypertrophy of the Cervix limited to one Segment or to one Lip.*¹

I have already said (p. 602) that the two lips of the cervix may be

¹ I cannot better sum up my opinion on partial hypertrophy of the cervix than by quoting the conclusions of the paper on this subject presented to the Academy of Medicine, 22 May, 1877.

1. Partial hypertrophy of the cervix is an increase of volume limited to one point of this organ.

2. It must not be confounded with tumours properly so-called of this organ.

3. It exists in the peripheric parts or in the parts which form the walls of the cervical cavity.

4. This partial hypertrophy of the walls of the cervical cavity is the least known and the most important to recognise.

5. It exists most frequently in the median line. It is often congenital, depending on arrested absorption of the partition which separates primitively the two uteri, and of which the columns of the *arbor vitæ* are the vestiges.

6. The irritation caused by excessive coitus and inflammation of the cervix after abortion or delivery, also cause or increase it.

7. It is often situated on a level with the vaginal orifice, lies frequently on a level with the isthmus, more rarely in the central portion.

8. The subjective signs are sometimes those of metritis or dysmenorrhœa (for deep-seated hypertrophy), always sterility. Usually there is the contrast of persistent sterility with the absence of dysmenorrhœic symptoms.

9. The most marked objective sign is the semi-lunar form of the os; in hypertrophy of the upper part of the cervix there is difficulty in passing the

unequally hypertrophied so as to place the orifice on the one or the other surface, and even to hide it behind the most hypertrophied lip. I have given examples of sterility due to this cause, in which aptitude for conception has been restored by the cure of the hypertrophy (*see* chapter on Sterility). Here I wish to give a brief but more complete explanation of the various kinds of partial hypertrophy which may affect one of the segments of the cervix.

In this kind of partial hypertrophy it is not one of the transverse segments of the cervix which is affected, but one of its two *longitudinal segments*, the anterior or the posterior. The anterior has seemed to me more frequently affected than the posterior. I have reason to believe it is the same with the body, and that partial hypertrophy may exclusively affect either the anterior or posterior segment, and, if I may judge by my own observations, it is more commonly the posterior. These partial hypertrophies of the body, however, besides being more difficult to verify than those of the cervix, do not produce such marked symptoms, and are not so easily curable. Hypertrophy of one of the segments of the cervix is often observed at the lower part of this organ, *i. e.* on one of the cervical lips; but it may exist also at its upper extremity, as well as at its median part, and even in its whole extent.

Sometimes we can only gain an exact idea of the existence and seat of this partial hypertrophy after dilating the cervix with sponge tents. We then see clearly that the obstacle to the free penetration of the sound is a partial hypertrophy of one lip (in this case the anterior one) a little above the orifice, and therefore we cauterise at the seat of the hypertrophy or the cervix itself, penetrating, however, deeply into the hypertrophied lip.

Hypertrophy of one lip not only is more frequently observed than other forms of hypertrophy, but it is more frequent; for whilst sometimes congenital, as the others generally are, it is much more commonly than these the consequence of chronic congestion or inflammation. Now the causes of these morbid states are much more numerous for the cervico-vaginal than for the cervico-uterine portion of the neck, more numerous also for the anterior lip (which is more commonly hypertrophied) than for the posterior. The hypertrophied lip may assume various forms: sometimes it is very voluminous, especially externally, entirely hiding the opposite one by projecting beyond it; sometimes, on the contrary, it is more developed internally, and then it distends the opposite lip and becomes covered by it;¹ sometimes it sound; dilatation by sponge tents and subsequent use of the sound allow of its being distinguished from ante flexion.

10. Treatment consists in general and local resolvents (baths, injections, medicated pessaries, hydropathy).

11. The special means are dilatation by sponge tents, scarifications or caustics for hypertrophy situated at the cervico-uterine isthmus, ignipuncture for hypertrophy situated at the vaginal orifice.

12. The cure of partial hypertrophy of the cervix leads to the cure of the sterility.

¹ Figs. 355, 356, give an exact idea of this arrangement. The cervix, as seen through the speculum (Fig. 355), shows a marked increase in the size of the anterior lip. The orifice assumes the form of a crescent, convex posteriorly,

is broad and thin, exceeding the other lip, over which it falls like an apron; at other times it is narrow and long and, projecting beyond the opposite lip, assumes the form of a beak or snout.¹ Even when the



FIG. 355.



FIG. 356.

uterus is conical, and when the os is reduced to a pin-point, not unfrequently this pin-point instead of being at the summit of the cone is on its posterior surface, constituting true hypertrophy of the anterior lip; sometimes the hypertrophy seems connected with flexion of the cervix, and in this case the lip corresponding to the convexity without being thicker is much longer than the other (anteflexion being most common, it is the posterior lip which is usually the seat of this elongation, of this hypertrophic extension).

These various kinds of hypertrophy are met with in women who have never conceived, and are either congenital (in which case they chiefly affect the conical form) or acquired in consequence of venereal excesses or local disease neglected for a long time. They are observed more frequently in multiparæ; then they are always acquired, and are due to chronic inflammation which has hypertrophied the organic tissue or the mucous membrane. They are a common cause of sterility, though not generally recognised as such, for though presenting an obstacle to the penetration of the semen, they permit the easy discharge of the menses, and consequently do not attract the attention of patients. I have seen in several sterile women a partial hypertrophy, the remains of the union of the two uteri, more common before than behind, and exaggerated by the natural anteflexion of the organ. This tubercle, which may be called the uterine uvula, is similar as regards position and symptomatological consequences to hypertrophy of the median lobe of the prostate. It does not always prevent the escape of the menses,

sure sign of hypertrophy of the anterior lip. The sound only penetrates into the uterus by following the curve formed by the cervical cavity, as is indicated in the section of the uterus, shown in Fig. 356. The posterior lip covers the anterior lip partly. Sims also refers to this semi-lunar form of the orifice (op. cit., p. 223).

¹ Beigel has made similar observations (*Berlin. Klin. Wochenschr.*, 1867, Nos. 47, 48).

but even when it offers no obstacle to any discharge from the interior it opposes an impassable barrier to the entrance of any fluid from without.

Hypertrophy of the median portion of the cervix is less frequent than that of its extremities. In this the cervix follows the law of every hollow organ, the orifices of which are the seat of hypertrophy or of the development of tumours and of degeneration more frequently than the walls. But it exists all the same, especially in the columns of the *arbor vitæ*, sometimes on both simultaneously, but more commonly on one only, the other being depressed by the progressive development of the former. Usually it is consecutive to hypertrophy of the internal orifice or of the lips of the vaginal orifice, and gradually disappears towards the median portion of the cervix. It may, however, be independent of it, existing alone.

Diagnosis.—This is easily made when we are aware of the possibility of the existence of such a disease. I am sure that I often ignored it in the beginning of my gynæcological practice. Besides the subjective signs, sterility, dysmenorrhœa and the other symptoms of hypertrophy, sight, touch, and the sound especially leave no doubt on the subject. Sight and touch only discover the excessive size of one of the lips, or the alteration in the form of the orifice. The internal seat of the hypertrophy of the tumefied lip is disclosed by the sound, which alone permits of the verification of partial hypertrophy of the median portion and of the *os internum*.

Treatment.—I shall add nothing to what I have already said as to resolvent treatment, general and local, solvents, tampons of glycerine, and glycerole of iodide of potassium, which may be applied here as in other kinds of hypertrophy. There are, however, two points upon which I ought to insist, because they may lead to cure without necessitating recourse to operation: I refer to puncture with the actual cautery, and the application of dilating bodies. It is especially in hypertrophy limited to one of the cervical lips that I have been able to observe the marked resolvent action of the actual cautery; but it is principally in this case that the tissue must be pierced with pointed cauteries at red or white heat according to the size of the tumefaction, taking care to spare the circumference of the orifice; although the cautery may be introduced into the cervical cavity, this is not usually indispensable (*see* Fig. 194, p. 213, representing ignipuncture of the hypertrophied anterior lip).

As for laminaria or sponge tents, they produce the most remarkable effects; it is sometimes necessary to slit the cervix or to incise the portion of the prominent lip slightly in its thickness, then to dilate the cervix with tents of increasing size, and lastly to profit by the dilatation to incise, excise, or abrade the exuberant tissues. But dilatation alone suffices to produce great modification of the hypertrophy; it softens the tissue, determining hypersecretion, a discharge which may be increased by the addition of a tampon of glycerine, facilitates resolution, and by the excentric compression which it exercises on the tissue, it stimulates the resolvent action. Resolvents may then be

applied directly to the tumefied parts to complete the mechanical and vital action of dilatation.

Recourse must sometimes be had, notwithstanding, to extreme measures, which are not dangerous if applied intelligently; these are excision, incision, or abrasion of the hypertrophied part. In performing incision and excision the flaps of mucous membrane should be preserved so as to allow the full size of the orifice to be retained. In amputation of the cervix there is still more reason for preserving fragments of mucous membrane when the os is involved. It is different when the malady is in the cervical cavity, or even at the os internum.

When the hypertrophy is situated in the cervical cavity or at the cervico-uterine orifice we should commence by dilating the isthmus before thinking of section. Very often repeated dilatation is sufficient to procure a satisfactory result. When insufficient, section, abrasion, or even amputation may be tried, according to the size of the tubercle or valvular barrier. Having dilated the uterine canal, I introduce one of Récamier's large curettes, which serves me for a guide, and prevents the uterus from bending. Then with a short probe-pointed bistoury or curved tenotome, guarded by the curette till the obstacle is reached, I make a median incision, or two converging incisions, which must not be deep; or I try to excise the tubercle, dividing it from left to right. To facilitate this amputation, or rather this abrasion, when the hypertrophied portion is soft, I have used one of Récamier's curettes, broad and sharp at the end, or better still one with a triangular fenestrated and sharp extremity, like that of Marion Sims, with which the excrescence, or its fragments if it has been previously divided, can be removed by trapping each successively in the fenestrum and withdrawing the instrument; or I sometimes use a kind of little hooked knife, the stem of which is flexible enough for it to be inclined in various directions.

When the hypertrophy is situated in the median part of the cervical segment it may be first treated with sponge or laminaria tents, scarifications, ignipunctures, or the same methods of abrasion and section may be employed as in cases of partial hypertrophy of the isthmus.

III. *Atrophy of the Uterus*

Atrophy of the uterus constitutes a morbid state in which this organ, after having been normally developed, loses, from various causes, its normal dimensions and shape, and is reduced to a smaller size. Scanzoni,¹ from whom I borrow this definition, divides atrophy into excentric and concentric. *Excentric* atrophy, a thinning of the walls with dilatation of the cavity, is usually symptomatic, either of hydrometria produced by the accumulation of mucus and the obliteration of the cervico-uterine orifice in the period of decrepitude, or of a rapid and considerable effusion of blood, with atresia, in young women, or of the formation and persistence of a fatty state after puerperal diseases.

¹ Op. cit., p. 71.

Concentric atrophy, thinning of the walls with contraction of the cavity, may be general or partial. When general, it is often accompanied by softening and small apoplectic centres. When partial, it may affect the cervico-uterine isthmus and produce flexions of the fundus on the cervix, or contractions and obliterations of the os internum.

Sometimes it depends on a purely local cause, compression exercised on the womb by tumours situated outside this organ, by sub-peritoneal fibroids, peritoneal exudations, organised plastic deposits round the uterus, solid ovarian tumours, or by large tumours arising from the pelvic walls. At other times it is due to simple senile alterations, or alterations of nutrition produced in the uterus by chronic maladies: to this last category belong cases of uterine atrophy brought on by a state of paralysis, a result which appears possible from some curious cases observed by Scanzoni in young paraplegic women, in whom the fact was demonstrated by autopsy. Jacquet (*Beiträge z. Geburtsh.*, Bd. ii, S. 2) mentions two cases of atrophy of the uterus: in one ovarian molimen persisted, in the other it was wanting. According to Chiari¹ atrophy may be observed in chlorotic patients and may be dependent on menstrual disorders. I have seen a case of uterine atrophy due to amenorrhœa dependent on general as well as local causes; and I have met with another which occurred after eight abortions. There is, however, a special kind of atrophy, due to an excess of the retrograde evolution which the uterus undergoes after delivery, to which Simpson has referred under the name of atrophy from excessive involution or *superinvolution*. It is the inverse of hypertrophy from subinvolution. It occurs when the progress of absorption is effected, after delivery, to an excessive degree, the organ being reduced to a size smaller than that of the uterus in the state of vacuity. It is comparatively rare, but occurs occasionally. Simpson² saw several cases in his practice, one of which was confirmed by autopsy.³

Diagnosis—subjective signs.—Suppressed or imperfect menstruation, which is not established normally after lactation. The breasts shrivel, the subcutaneous adipose tissue covering them is absorbed, the skin becomes wrinkled, the patient although young having all the appearance of premature old age. The whole economy participates in the change that has taken place in the uterus, just as in women at the climacteric when the functional activity of this organ terminates. Sterility results as a matter of course. The health is affected, the patient suffering from anæmia, dyspepsia, frequent headaches, and general debility of body and mind.

Objective signs.—Vaginal touch reveals an unusually small cervix, projecting so slightly beyond the vaginal *cul-de-sac* that it is hardly

¹ *Klinik der Geburtsh. in Gynäcol.* Erlangen, 1852, S. 271.

² *Op. cit.*, p. 597.

³ Mickschik (*Wiener Zeitschr.*, 1856, Bd. xii, Heft 3) has published the autopsy on a woman 24 years of age, who died five months after two deliveries. The ovaries and the uterus were atrophied. The latter was 30 mm. in length, 40 in width. The walls were $\frac{1}{4}$ inch thick. Microscopic examination showed fatty degeneration of the uterus and ovaries.

perceptible; the womb is small, light and mobile; it is difficult to seize it by abdominal palpation notwithstanding the thin and relaxed abdominal wall. The os is small, only admitting the entrance of an extremely fine sound, in the introduction of which great care must be taken not to use any force, for the walls are hardly any thicker than a sheet of paper. Klob¹ mentions a case of the kind. Simpson saw a similar case, where a sound carelessly introduced pierced the uterine walls and penetrated the peritoneal cavity. This accident has happened more than once; fortunately it is not followed by such serious consequences as might be supposed. When the sound is used with all necessary precaution, it only penetrates to a depth of 3 to 4 centimetres, which proves that the organ is abnormally small.

Treatment.—Is there any means of bringing the uterus back to its normal condition and of restoring the patient to her former health? When the uterus is completely atrophied, this is hardly possible, but when only slightly affected there is some chance of cure. In atrophy of the uterus due either to congenital imperfection of development at puberty, or to excessive retrograde evolution during the puerperal state, the best treatment consists in the use of the galvanic stem. In order to understand the way in which this treatment acts, we must remember this general law: in uterine therapeutics as well as in uterine physiology and pathology, all continuous and increasing irritation, all dilatation of the walls of the uterine cavity by a foreign body, promotes the development and hypertrophy of the organ. When the uterus is atrophied, a short and acute irritation like that produced by the introduction of a sponge tent for one or two days is not enough, a more continuous irritation is required, like that produced by the prolonged use of a series of small galvanic stems of gradually increasing length and thickness. Simpson² often saw menstruation restored temporarily or even permanently by the use of this means. Among other cases he mentions a very remarkable one, in which the galvanic pessary was left several months or even years in the uterus and in the end effected the restoration of regular menstruation, the return of the organ to normal dimensions and the disappearance of all the serious accidents which had for long disordered the general health. Marriage may be the means of curing atrophy. Therefore Vannoni³ has recommended coitus in atrophy of the cervix as useful in hastening the development of this organ. Intra-uterine injections may be beneficial, as well as stem pessaries, laminaria tents, or other foreign bodies. Electricity is especially likely to be successful: it would act probably on the uterus as it does on atrophied muscles.

¹ *Pathologische Anatomie der weiblichen sexual Organe.* Wien, 1864, p. 206.

² *Op. cit.*, p. 637.

³ *Journal des connaissances méd.-chir.*, 1850, p. 19.

GRANULATIONS AND FUNGOSITIES

Uterine granulations are small fibro-vascular excrescences, usually multiple and confluent, variable in number and size, seen most commonly about the cervical orifice, although they may be developed over the whole external and internal surface of this organ and even in the uterine cavity, either from a simple disturbance of its local life, or under the influence of a general morbid condition whether diathetic or not.

Fungosities are only granulations in a further stage of development, softer, more vascular, bleeding more, situated on the cervix or at different depths in the uterine cavity. Chomel¹ says: "Granulations constitute a malady proper of the cervix uteri." He adds, however, that a tendency to similar granulation is sometimes observed in the mucous membrane of the pharynx, and more frequently in men than in women.

Etiology.—*Predisposing causes.*—*Local predisposing causes.*—The vitality of the uterus with its remarkably plastic tendency, its structure in harmony with this tendency, showing an instability of organisation, or rather a continual tendency to hypertrophy and atrophy, the character of its functions, favouring by the frequency, periodicity and nature of its fluxions this tendency to plasticity, are evidently three circumstances which predispose the uterus, and particularly its mucous membrane, to hypertrophy, and more especially to granular hypertrophy. The fibro-plastic tissue, which is chiefly found in the dermis of the mucous membrane, is by its nature more predisposed to hypertrophy than any other; for it constitutes in itself a state of transition between the blastema and the fibrous tissue, and manifests anatomically, in the most evident way, the incessant tendency of the uterus to organisation or hypertrophy. It is to this structure that the internal membrane of the uterus owes the power of undergoing an enormous tumefaction from the moment of conception, of forming the decidua and of finding the elements of its regeneration ready to hand at the given moment.

It is impossible not to attribute to these anatomical conditions a great influence over the hypertrophic tendency which characterises all uterine maladies, particularly those of its mucous membrane; and further, it is difficult not to attribute to the existence of the *fibro-plastic* tissue the part which it takes in the formation of the papillæ of the dermis, and to its interposition between the mucous follicles the special tendency to granular hypertrophy. Thus it is that uterine fungosities, *i. e.* more or less fungous granulations of the cervical cavity are frequent; and that granulations of the cervix especially, as the part most exposed to external agents and to all the morbid accidents capable of producing them are more frequent still; there is no diathesis under the influence of which they cannot be developed or

¹ *Diction. de méd., en 30 vol., art. UTERUS, MÉTRITE GRANULÉE.* Paris, 1846.

perpetuated : judging from my own experience, out of nearly 3000 cases of uterine maladies I have had 450 cases of granular cervix.

General predisposing causes.—Diathetic affections of all kinds have a large share in the production and chronicity of uterine maladies. Almost all writers on uterine diseases in the last few years have attributed these granulations to inflammation of the cervix. Since Bennet¹ published his admirable book on this disease, metritis has taken too large a place in the domain of uterine maladies. For Aran, Becquerel, Nonat, granulations as well as redness, erosions, ulcers, leucorrhœa, &c., are but symptoms of metritis. I am not, however, alone in trying to prove that inflammation is not everything in uterine diseases in general, and in the production of uterine granulations in particular. Timbart,² although he admits, contrary to my opinion, that granulations do not of themselves form special and distinct maladies, demonstrates in the conclusion of his work that these lesions may occur as symptoms or complications in the majority of uterine affections : those affections with which he specially connects them are uterine catarrh and scrofulous engorgement of the cervix. Fontan, Durand-Fardel and Guéneau de Mussy, being struck with the coexistence of pharyngeal and uterine granulations with skin diseases, think that they may often be dependent on herpetism. Tillot,³ like Pidoux, connects them as well as all other uterine diseases with the existence of some diathesis.

Among the diathetic states which, in fixing themselves on the cervix, may produce uterine granulations, syphilis and catarrh seem to play the chief part.—In the lock wards of the General Hospital of Montpellier I have had occasion to see a number of women affected with uterine granulations coexisting with various syphilitic symptoms, and although it is difficult to decide in all cases whether there is simple coincidence or community of origin and nature between these granulations and the various manifestations of the syphilitic affection, I am inclined to believe (especially after the cures which have followed the specific treatment employed) that the syphilitic diathesis had a share in the development of the granulations. It is seldom, however, that anti-syphilitic treatment is sufficient of itself to overcome this malady ; this is doubtless owing to the hypertrophic tendency of the uterine tissue under the influence of which it is produced and has a tendency to become perpetuated.—Catarrh which attacks the uterus so frequently, not only in multiparæ but in newly married women, and even in girls, is not only manifested by a mucous discharge, but by the fluxion which it keeps up towards the mucous membrane, bringing its hypertrophic tendencies into play and producing granulations. Timbart justly remarks that cervical erosions and granulations diagnosed constantly as lesions of blennorrhagia and uterine catarrh

¹ *A Practical Treatise on Inflammation of the Uterus, its Cervix and Appendages.*

² *Des érosions et des granulations du col de l'utérus, de leur valeur nosologique.* Thèses de Paris, 1849.

³ *De la lésion et de la maladie dans les affections chroniques du système utérin.* Thèses de Paris, 1860.

ought to be included as special characters in the history of these diseases: simple erosion for the acute and non-malignant form, and granulations for the chronic and serious form. I could myself mention cases of catarrhal granulations, and have no doubt that granulations of this kind are at least as frequent as others.—The diathesis which exercises most influence on the development of granulations according to Chomel, Robert, Huguier, Scanzoni, Guéneau de Mussy, Durand-Fardel, Fontan, &c., is the herpetic, the external manifestations of which these writers have often seen coincide with the existence of granulations. I have also met with several cases in which these two maladies coexisted (herpetism and granulations), especially in women affected with pityriasis, eczema, herpes, ciliary blepharitis, simultaneously with uterine granulations, and who had no symptoms of any other affection, such as catarrh, scrofula, inflammation, &c., or who could not attribute the development of this disease to any local cause, such as excessive intercourse, pregnancy, &c.

Tillot, in reviewing the various diatheses which play the chief part in the etiology of chronic uterine affections (granulations amongst the rest), enumerates them in the following order of frequency: the strumous, syphilitic, herpetic, cancerous, &c. In the production of these granulations I do not think that the scrofulous should have a more prominent place assigned to it than the other diatheses just named.—The part taken by rheumatism and more rarely by gout, although less marked, is not the less certain, and I think the practitioner cannot afford to ignore it.

Determining causes.—Any cause which produces a certain degree of irritation in the organ, which stimulates its vital activity, and excites its plastic or hypertrophic tendency, may occasion the formation of these granulations. In this way *dysmenorrhœa* and other *menstrual disorders* suffice to develop them, and may be the only causes to which they can be attributed in girls. *Marital intercourse in newly married women* is undoubtedly a determining cause. Owing to the novelty of the act, and in some measure to the traumatism to which the cervix is exposed, or it may be to the frequency of coitus and the attendant excitement, the cervix undergoes, as a consequence of this anatomical and physiological shock, a modification in its vitality which brings into play its tendency to hypertrophy, probably at the most sensitive parts, or at the orifices, whence it results that the urethral meatus is usually the starting-point of the granular formation. In such cases especially these granulations seem to me to coincide with inflammation of the follicles and uterine discharges. Excitement of the sexual organs by *venereal excesses*, especially the frequent contact of the penis with the cervix, may have a share in the development of granulations, but not more, it appears to me, than it has in the development of other uterine diseases. *Pregnancy*, by bringing into play the hypertrophic tendency, should be the most common of all determining causes. Pregnancy of itself modifies the life of women so greatly, producing so many pains and morbid symptoms due to the development of the uterus and abdomen, that the majority of women,

even when they suffer much, do not think of consulting a physician, and still less of undergoing an examination; therefore it is difficult to establish any conclusions with regard to this matter. It may, however, safely be affirmed that it is rare to examine a pregnant woman without finding a granular cervix. *Delivery*, and especially the *after effects of labour*, bringing in their train engorgement, congestion and even inflammation or hypertrophy, may be regarded next to pregnancy as the most powerful determining causes. Lastly, *uterine inflammation*, when left to itself, or if some condition of its development have fixed it on the cervix, may play the double part of occasional and essential cause.

Course.—Usually these granulations *first appear* at the os, on one of the lips or else all round the orifice. This is seen especially in women who have not conceived, in whom the cervix is more or less conical, with a narrow circular orifice. They afterwards spread either externally or into the cavity, so that when examined they already form a red mammillated patch from 1 to 2 centimetres in diameter, the centre of which corresponds very nearly with the os, the borders being very irregular on both lips, owing to the unequal development of the granulations on the neighbouring points of the uterine tissue. At the same time that the granulations spread over the surface, whether externally or in the depth of the cervical cavity, they also extend in all their dimensions—that is to say, that having increased in number they increase in size, acquiring sometimes a considerable volume, and taking the name of fungosities. This course is essentially chronic, offering no natural retrograde tendency—that is to say, no tendency to spontaneous cure. The intervention of art is all the more necessary that the course of these granulations is not always limited to the symptoms I have just sketched. Although they sometimes exist without complications, they more generally cause concomitant symptoms, functional alterations or pathological processes, either concentrated in their own sphere or further removed from it. Thus follicles, the orifices of which are usually at the bottom of the grooves which separate the granulations, become irritated and secrete an abundant, opaline, whitish mucus. Sometimes they become inflamed as well as the granulations themselves; they secrete pus, ulceration may attack the granulated surface, and the purulent secretion of this surface is then added to the muco-purulent secretion of the follicles. This secretion may be the only apparent trace of organic lesion when the granulations or fungosities are situated in the interior of the cervix, and when the conditions are not such as to allow of the gaping of this organ. The development of granulations, which are an obstacle to free communication between the uterine and vaginal cavities, prevents conception and may become a more or less painful obstacle to the expulsion of uterine mucosities, menstrual blood, &c., even when it does not cause the still more serious symptoms of uterine fluxion, tumefaction of the womb, or obstinate menorrhagia or metrorrhagia. This, however, hardly occurs except in the case of fungosities developed in the cavity of the body of the uterus, and known as *uterine fungosities*. Since

Récamier's¹ investigations these latter alterations have been the object of special study.² Although infinitely less frequent than granulations, they seem to form an analogous malady, and several times the gradual extension from the one to the other has been observed.

Granulations, in certain cases, cannot long continue without causing engorgement, and more frequently partial or total hypertrophy of the cervix, and what is more serious, inflammation of this organ and even of the whole uterus. They are, therefore, a constant source of danger for the women who are affected by them, especially in cases of pregnancy. Most writers agree in considering granulations and fungosities, as well as ulcerations, as possible causes of abortion in pregnant women.

Varieties.—The *seat* is at the os uteri, especially in virgins and in nulliparæ: usually on the cervical lips in pregnant women and in multiparæ; very often extending farther on one lip than on the other (the anterior has seemed to me more frequently affected than the posterior), but seldom on one only; often limited to the external surface of the cervix (especially in pregnant women); often also extending to a more or less considerable height into the interior of the cavity (when they occur after delivery); sometimes even reaching to the cervico-uterine isthmus, in fact they may be situated exclusively in the neck whilst there is no external trace; this is especially the case when they are catarrhal in nature.

The *number* of the granulations is usually considerable. Some idea can be formed as to the variation in number from their differences of disposition and volume.

The *disposition* may differ much according to whether the granulations are discrete or confluent. They are very seldom discrete: the only examples perhaps being the hypertrophic inflammatory pimples round the follicular orifices, which, as I have said, may be seen on the cervix. On the contrary, they are almost always confluent, spreading more or less on the surface of the cervix, or rising more and more from the point where they have taken birth so as somewhat to resemble a strawberry or raspberry. Lastly, granulations are seldom seen disseminated singly or in little groups outside the principal granulated surface. This *surface* is rounded or elliptical, sometimes irregular, with jagged edges. It seldom extends over the whole cervix, although it may greatly exceed the average extent of from 1 to 2 centimetres, especially in cases of hypertrophy. In colour and relief it contrasts strikingly with the pale colour and smooth aspect of the rest of the cervix when the latter is neither congested nor inflamed.

The *size* of the granulations is usually very small, about that of a millet seed, seldom equalling that of a small lentil. The agglomeration and confluence of these little pimples often give to a number of them the appearance of one large one. However, there is no doubt that the granulations which are formed on ulcers, those which become fungous, those which are of scrofulous nature and those which are

¹ *Union médicale*, 1850.

² Rouyer, *Des fongosités utérines*. Thèse de Paris, 1858.

found on an engorged or œdematous cervix, sometimes present very considerable dimensions.

The *colour* of the granulations is always more or less red. This redness varies little in successive examinations in the same woman. It may, however, increase or diminish in intensity, according to whether menstruation is near or not. Usually this redness is very marked, but sometimes it is pale pink, at other times it is more or less purple; in this respect inflammatory granulations, for example, may differ much from granulations of a scrofulous nature. The colour of the granulations although contrasting strongly with that of the cervix in the normal condition, is not so different as Chomel has asserted. For instance, during pregnancy they assume the wine-red aspect which is characteristic of the cervix at that time, and which spreads, as we know, to the surface of the vagina and to the nymphæ. It is remarkable that after death they lose much of their colour and even of their volume, especially those which are fungous.

The *structure* of these granulations may vary like the other characteristics of which I have just spoken. It is such as to impart a soft consistency generally to the granulations; therefore in practising digital touch they may be torn with the nail or be made to bleed by wiping the surface with cotton-wool. Sometimes, owing to the predominance of fibrous or fibro-plastic elements, they acquire a hardness which enables them to resist these attempts and prevents their being removed by scraping. At other times from the predominance of the vascular elements, they become fungous on the contrary, bleeding easily, the slightest contact, coitus especially, in such cases causing slight hæmorrhage, or at least the flow of a few drops of blood. Between these two extremes there may be a number of degrees and even varieties of structure, according to whether the fibrous element, the epithelium, the amorphous matter, the lymph, &c., have more or less share in their composition.

As to the *differences in nature*, herpetic granulations are generally external, bright red and only slightly projecting; scrofulous granulations more frequently than others occupy only one lip, they are more voluminous and paler; catarrhal granulations are often more developed internally than externally, and are always covered by a more or less opaline consistent mucous discharge. Fungous granulations frequently developed on a pre-existing ulcer often occupy the cervical cavity also; they are voluminous, red and bleeding. Granulations are not contagious unless syphilitic.

Diagnosis.—They often exist without giving rise to any characteristic symptom, or to any local phenomena; therefore we must take sympathetic disorders into account; however slight they may be they should never be neglected; leucorrhœa especially ought to be taken into serious consideration as well as lumbar pain.

Subjective signs.—Uterine granulations sometimes cause disordered menstruation. When fungous they may determine menorrhagia, the expulsion of clots, &c.; when they are hard, hysteralgia uterine colics, and excited doubtless by the difficulty which the uterine contractions have

in overcoming the spasm or mechanical obstacle caused by induration of the cervix. The pains are sometimes absent or are the same as in all uterine maladies; they seem to be seated in the vagina or developed on the cervix, especially during coitus. The remote pains are in the renal region or in the thighs, seldom in the hypogastrium or in the iliac regions, as in metritis, peri-uterine inflammations, engorgements, deviations, &c. When there are no pains, or when they are concealed, for example by pregnancy, the trouble may be ignored, manifested only by general discomfort, want of appetite, paleness, emaciation and all the consequences of the sympathetic disturbance of the digestive and nervous functions.

There is one general symptom which is not pathognomonic but which is frequently the consequence of granulations, viz. sterility. It is owing to the mechanical and physiological difficulties in the way of fecundation formed by the granulations fitting into each other, the viscosity and adhesiveness of the mucus which covers the surface and forms a gelatinous stopper and by the irritability and spasm produced in the cervico-uterine sphincter.

Objective signs.—A red, granular surface, commencing at the os uteri and radiating over a more or less considerable extent of the cervix, formed of small granulations usually confluent, seldom discrete, rarely attacking the whole cervix, but forming a kind of patch or mammillated elevation somewhat like a raspberry, surrounded on all sides by a healthy annular surface of the cervix. A more or less abundant glairy, muco-purulent or purulent discharge almost always covers it, and must be removed before the granular surface can be seen. This discharge which is seldom pus, but which may be opaque, semi-transparent or opaline, is often clear like white of egg. In the latter case it is seldom that it is not sufficiently abundant to be discharged from the vulva moistening the inner surface of the thighs, and leading the patient to think she must have some uterine disease. The finger with difficulty determines the circumference of the granulations, but can easily discover the elevations round the cervix or in its orifice; the sensation felt by the tip of the finger, and which has been compared to that produced by shagreen leather, is more like that communicated by Utrecht velvet (Chomel); the finger almost inevitably brings away a few drops of blood from the nail slightly scraping the diseased surface: it is easy by sight and touch to distinguish granulations of the cervical cavity from simple leucorrhœa.

Differential diagnosis.—Granulations must be distinguished from vegetations, ulcers, erosions and the various eruptions which may have their seat on the mucous membrane of the cervix, such as pemphigus, eczema and especially herpes.

Vegetations are only vascular epithelial excrescences. When the epithelial development is not accompanied by a rich vascular development there results a hard production of a dull leathery white, something like a flattened wart, developed on one of the lips or on one of the sides of the cervix rather than at the orifice. In the rare cases when great vascularity is added to epithelial exuberance, vegetations of

the cervix have the familiar appearance of vegetations of the vulva and prepuce, and consequently are distinguished by their projection, their subdivisions, by real granulations and even by uterine fungosities. As for the other vegetating excrescences which do not depend on syphilis, like the majority of the vegetations of which we have spoken, and which under the names of fungosities, cauliflower excrescences, &c., are only manifestations of the more or less rapid increase of uterine cancer, it is still more difficult to confound them with granulations of the cervix.

Polypi are pediculated tumours of a more or less considerable size, resulting usually from the hypertrophy of one of the anatomical elements of the uterus, and developing gradually without any diathesis or morbid state other than hypertrophy pure and simple. It is the same with the *follicular cysts* described by Huguier.

Various vesicular and pustular *eruptions*, such as herpes, eczema, pemphigus, &c., may appear on the cervix leaving a red surface, which bleeds easily, and which is sometimes confounded with granulations strictly so called and classed with these latter by some writers, and more or less distinguished from them by other authors under the name of erosions, exuberations, &c. It is always easy to verify the characteristic course of these maladies, the gradual development of vesicles, pustules, follicular eruptions, however small and confluent they may be, the flat bleeding surface which results, the distinct borders of the erosion, the absence of more or less thick mucous secretion, the epidermic denudation; lastly, the absence of exuberances due to the development of the anatomical elements, the existence of which is verified in the granulations.

Ulcers may attack a more or less extensive portion of the cervix, in some circumstances presenting at first sight so much apparent analogy with uterine granulations, that several writers have not distinguished granulations strictly so called from granular ulcers. Now, at the commencement of their development, ulcers may present the appearance of some of the eruptions first named, but with the progress of the pathological process which produces and keeps them up they soon assume a characteristic form, an inspection of which is usually sufficient to distinguish them.—There is, however, a period when *ulcers* may assume characters which make them resemble granulations: it is when they become really *granular*, either from being covered by true cicatricial granulations, which will soon produce a real cicatrix, or because they become the seat of a more or less luxuriant vegetation, which makes the healthy granulations persistent, extensive, bleeding, sometimes considerably exceeding the limits of the ulcer.

Healthy granulations, to borrow the description given by my friend and colleague M. Charles Robin, “are conical and reddish elevations developed on the surface of suppurating wounds where they determine cicatrization. They are formed all the more quickly when the tissue is cellular and vascular; at first broad, soft and only slightly projecting, they soon constitute by their union a kind of membrane provided with blood-vessels. They are composed: 1, of a large pro-

portion of amorphous granular matter ; 2, of fibrillæ of cellular tissue of new formation interlaced ; 3, of fibro-plastic elements with rather large and pale nuclei ; 4, of capillaries. They increase in size by the production of new elements added to those of the same kind throughout the whole thickness of their mass. The surface of these rudiments of cicatricial tissue is covered with pus and gradually with epithelial cells, which soon exceeding the pus in quantity form a thin and whitish pellicle of epidermis continuous with that of the skin : this is called cicatrisation. As this epidermic pellicle is formed the granulations disappear, owing to the slow but energetic disappearance of the molecules of the amorphous matter by absorption, and the consequent bringing together of the fibrous elements ; this is what determines retraction of the borders of the wound, leading to the belief in the contractility of cicatricial tissue." Absorption, continuing after cicatrisation is concluded, determines, as I think I was the first to teach,¹ contraction of the cicatrix. Uterine granulations which are developed on the cervix are composed, like true cicatricial granulations, of the elements of fibrous tissue which enter into the composition of the cervix, of fibro-plastic elements whether pre-existing or of new formation, of fibrillæ of cellular tissue newly developed, and of granular amorphous matter. These elements, constituting a kind of hypertrophy of the dermis of the mucous membrane, are traversed by capillaries, the variable number of which renders cicatricial tissue more or less prone to bleed at the slightest contact. It is covered by epithelium, in which cells of new formation often strengthen the layer of the old cells ; the thickness of the epithelium which results does not prevent the granulations from bleeding when rubbed with the tip of the finger or when wiped with cotton wool, because the cells of new formation are always so soft and delicate as to offer but little resistance ; sometimes even the subjacent connective tissue is laid bare by a superficial erosion.—There is therefore a great resemblance between uterine granulations and the granulations of cicatricial tissue. Uterine granulations, however, besides being real tissue developed at the expense of the fibro-plastic or embryonic elements, are hypertrophied papillæ of the dermis, either simple epithelial elements, like those entering into the structure of vegetations, or hypertrophied vascular elements of the papillæ or capillaries interposed between the follicles or surrounding them, or else real hypertrophied follicles always characterised by a point at the summit of the granulation, the point being only the orifice of the follicle.

Prognosis.—Uterine granulations do not involve any serious danger ; but they have a tendency to increase, they last a long time, often withstanding rest and treatment ; they are inconvenient from the mucous and sometimes sanguineous discharges which accompany them ; they cause more or less marked general debility, and prevent conception taking place. This prognosis makes it the duty of the physician to persuade patients to undergo necessary treatment.

¹ *Clinique chirurgicale.*—*De la formation des cicatrices, de leur rétractilité et des difformités qui en résultent*, p. 291. Montpellier, 1851.

Treatment—the indications.—According to 1, the nature of these granulations or the diversity of the affections or morbid processes by which they are kept up; 2, the analogy and variations of structure which they present in various cases; and 3, the hypertrophic tendency which characterises them, it is evident that each of these three terms becomes the source of indications in proportion to the share which inflammation has in its development.

I. I shall not speak of the treatment to be used in subduing the nature of the malady, except to mention that my opinion is contrary to that of those gynaecologists who regard uterine granulations as granular metritis to be treated by antiphlogistics local and general which usually produce no effect. Nevertheless when metritis exists, the inflammation should be treated by leeching the cervix, emollient baths, with prolonged irrigations, the application of mercurial ointment to the abdomen, groins and thighs, and by revulsive purgatives. After the cure of the metritis it will, however, be necessary to treat these granulations by suitable local means. In other cases we must treat the catarrhal affection or the constitutional diathesis whether scrofulous, rheumatic, herpetic or syphilitic before using local means or at least simultaneously with them. I could mention many cases in which patients have only been definitely cured after having undergone general treatment by mercury, iodide of potassium, cod-liver oil, iron, sea bathing, mineral waters, hydropathy, &c. It is the same with the chronic form, which may exist without being dependent on any diathesis and without presenting any inflammatory character which would allow of its being considered with chronic metritis as some writers have done. In such cases the organ may no longer be inflamed, even if it has previously been so, but it retains the habit of fluxionary movements, congestion, engorgement, hypertrophy, which are all the more difficult to eradicate because favoured by a condition of anæmia, chloro-anæmia and general debility. When this is the case restorative medication, tonics, a generous diet, iron, hydropathy, hot vaginal injections, blisters on the cervix, astringent and resolvent applications, with inert powders, and igni-punctures to destroy the granular surface produce the best results.

II. As to the second indication, the state of hypertrophy which characterises uterine granulations and the hypertrophic tendency of the cervix which their existence increases, necessarily indicate the application of means the resolvent properties of which have the faculty of determining a tendency to absorption or atrophy. Therefore astringents of all kinds are employed in injections, *e.g.* the decoction of red roses, oak bark, rhatany, solutions of tannin, alum, nitrate of silver, &c., sulphur and iron waters whether natural or artificial have often been tried, although perhaps no case of cure can be attributed to them. Astringent powders, such as tannin and alum; solvents, such as mercurial and iodide ointments, have also been applied unsuccessfully to the seat of disease. They have the drawback not only of acting very superficially on a lesion of considerable depth, but of necessitating the presence of a tampon in the vagina, the contact of

which only irritates the cervix and the neighbouring parts, while it prevents other means of treatment (injections and irrigations) from which the patient would derive more benefit. Vaginal injections made on the bidet morning and evening with very hot water and a little carbolic acid is an excellent way of combating the congestion of the cervix and removing purulent liquids, the contact of which helps to keep up the granulations: but this is often insufficient to obtain a cure.

III. The third indication, to subdue the hypertrophic tendency of the granulations, leads to the necessity of cauterisation, the most powerfully destructive as well as alterative local means that can be used. I have given up the use of *liquid caustics* with the exception of Tinct. Ferri Perchlor., Tinct. Iodi, the concentrated solution of nitrate of silver, and a few others which only act slightly on the healthy surfaces covered with epithelium. *Solid caustics* are either insufficient, like melted nitrate of silver, or too active like the Vienna paste or chloride of zinc. These latter caustics as well as arsenic and crystallised chromic acid, may be of great service in the treatment of cervical ulcerations; but in the treatment of granulations, the actual cautery seems to me very superior.

The *actual cautery* is in fact that which requires least precaution, the action of which is the most easily limited throughout its whole extent, and that in which the consequences seem most favorable to speedy and complete cure on account of the nature of the cicatrix and of the good results experienced by the neighbouring tissues, nor do I know any drawback that it has. It is usually sufficient to use it once, in order to destroy the granulations and to modify the underlying tissues sufficiently. On the other hand I have often seen less energetic but frequently repeated cauterisation cause fluxionary and inflammatory symptoms which never follow the use of the red iron. Cure is very rapid. Taking the average of several hundreds of cases it follows in six weeks, *i.e.* in the simplest cases and it may be obtained in three weeks; in complicated cases requiring general treatment and a second cauterisation it may be delayed for three months. The surgeon is complete master of the caustic; by varying the form of the cautery, the degree of heat applied, the duration of the application, &c.; he can make the application as superficial or as chief, as limited or as extensive as he wishes. When made nothing is left in the vagina and uterus but the scar, so we have neither to consider how to get rid of the rest of the caustic, nor to contrive means for retaining it.

The actual cautery may even be applied exceptionally in cases of pregnancy when formidable symptoms such as obstinate vomiting seems produced or kept up by granulations. I have long ago proved not only the innocuity and utility of the actual cautery applied to the cervix even during pregnancy,¹ but also the consecutive accomplishment of the normal phenomena of parturition in pregnant women in whom granulations had been treated by cauterisation.²

¹ *Annales cliniques de Montpellier*, Aug. 25, 1853.

² *Ibid.*, April 10, 1854.

Lastly, when it is a question of *uterine fungosities* situated in the cavity of the body and causing hæmorrhage, cauterisation is too painful and difficult to be applied so deeply. In such cases we should commence by removing these fungosities with Récamier's or Sims's curette, and afterwards modify the surface of the mucous membrane by a caustic injection.

ULCERATION AND ULCERS OF THE UTERINE CERVIX

An *ulcer* is a morbid state characterised by a loss of substance of variable extent as regards both width and depth, kept up if not produced by some internal cause or by local morbid action, and usually excreting a more or less purulent fluid.

Ulceration is the pathological action which produces the ulcer. It is an alteration in the nutritive process as when decomposition is in excess of composition, disassimilation of assimilation. I may say of ulceration what I have already said of leucorrhœa, engorgement, inflammation, that this malady may be developed at the close of another malady of which it seems to be the result or termination; but it may also be developed all at once under the influence of general causes and a local tendency. Sometimes it remains simple, pursuing its natural course, and passing through the various phases of its development without necessarily leading to new disturbances in the organ; sometimes on the contrary it is accompanied by other morbid states either as consequences or simple complications. It therefore happens that ulceration usually coincides with other diseases, and that if not the result of them it cannot last long without producing them.

But it would be wrong to conclude from these coincidences that ulceration is the primary cause of these maladies as the ancients did, or as some gynæcologists in our own time have done; nor would it be correct to conclude with Bennet, Aran and Nonat that it is the result of inflammation, nor with Lisfranc and Duparcque that it is the consequence of engorgement, or with Gosselin, Tyler-Smith and others, that it is produced by leucorrhœa; while West's opinion, that ulcers of the cervix are of no importance, ought to be refuted coming as it does from a writer so justly entitled to respect.

If we investigate facts we shall admit with West that ulceration of the cervix is very common; but we shall not like him deduce from this fact of frequency that it is unimportant. I do not mean to say that its frequency necessarily involves its importance. Its importance depends on several causes: in the first place undoubtedly on the frequency of the lesion (we should always pay attention to a malady which occurs often); then on its varieties of aspect, on the different causes which produce it, on its incurability when left to itself; lastly, on the necessity of applying a suitable local treatment. I have often endeavoured to measure the degree of importance which should be attached to ulceration of the cervix; I have frequently treated the engorgement, inflammation, leucorrhœa, without treating the ulcer; I

have often employed the most powerful alterative general treatment, injections even, and I may say that I have hardly ever succeeded in curing the ulcer by these means alone. Local treatment, cauterisation and dressings have seemed to me indispensable in the great majority of cases.

1. *Eruptions on the Cervix*

Eruptions of various kinds may be developed on the cervix. When we are fortunate enough to see their first appearance we can form an idea of the variety of forms which they assume, and when we compare them with those which are seen on the skin or on other mucous membranes, we are disposed to admit the difference of causes which influence their development. These eruptions and other modifications in the structure of the cervix are conditions which prepare the way for ulceration.

The most simple of these modifications of the cervix is *redness* or *erythema*, whether due to hyperæmia, real erythema or to a large ecchymosis, or to a special congestive condition with softening of the tissue and a tendency to bleed. In addition to these morbid conditions there may also be leucorrhœa; under the influence of which an abrasion of the epithelium of the mucous membrane is sometimes produced which gives rise to the superficial exulceration designated by the name of *erosion*. *Herpes*, which is one of the forms of the vesicular variety, is very common on the cervix: it is constituted by a heap of small vesicles, all confluent, or some of which are discrete, grouped irregularly, forming a surface covered with small hollow eminences filled with transparent, citrine, whitish or slightly purulent serosity. It is limited by sinuous or jagged borders, rather redder than the neighbouring parts but gradually blending with the natural colour of the rest of the cervix. It is situated on one of the lips, in the central and most convex part, or near the orifice more frequently than on the external border. It resembles the herpetic eruption on the prepuce, and though it sometimes becomes the starting-point of an ulcer it is often cured spontaneously, disappearing in a few days, which is undoubtedly the reason why it has not been seen more frequently.

Eczema, whether simple or impetiginous, is also developed on the cervix. It is hardly ever seen in its first stage; but is known by its extent, secretion, and the denudation of the dermis. In place of being confined like herpes to a small surface or to one of the lips, it usually extends over the whole of one of the lips or over both. The surface is often covered by a fluid or semi-fluid secretion, which must be wiped off before the dermis can be seen.

Pemphigus, of which I have seen some cases, has been described by Joulin.¹ It is constituted by one large and transparent vesicle, formed by an elevation of the epithelium, containing a serous fluid like water. It has a globular or rather elliptical form, with irregular borders, resembling somewhat a large and thick drop of transparent and thready

¹ *Académie de médecine*, April 2, 1861.

mucus secreted by the cervix. It is sometimes surrounded at its base by a very narrow bright-red border, which appears to consist of pure blood. The surface of the cervix on which it rests is perfectly normal, preserving its usual hue, and may show absolutely no alteration. The portion of epithelium which serves as a wall to the vesicle is so resistant that rubbing with cotton wool will not always rupture it; if rubbed with the crayon of nitrate of silver the bulla is destroyed immediately, and the fragments of epithelium which are observed after this rupture form the only appreciable alteration. The fluid discharged does not appear to be viscous; it seems to possess the properties of ordinary serum.—Uterine pemphigus is a rare disease. Nélaton, Castelnau and Braun¹ have observed a few cases.—It seems always to terminate spontaneously in three or four days without leaving any traces; it is accompanied by no symptom perceptible to the patient. It is therefore only accidentally observed on applying the speculum for some other cause.

Folliculitis, true *acne* of the cervix, may assume various forms, from the most simple, that of punctated acne, to that of hypertrophic acne, depending on the share which inflammation and the secretion of the



FIG. 357.—Indurated acne of the cervix in a woman 42 years of age. Slight retroflexion and induration of the uterus. Round the *os externum* there is considerable tumefaction, almost like a mushroom, extending to the vaginal portion as well as to the cervical cavity, and dotted over with a number of Naboth's eggs, some containing mucus, others pus (Virchow).

follicles take in the malady.—Sometimes the follicles are tumefied, prominent, and secrete more abundantly than usual; we then see rising

¹ *Medical Jahrbücher*, S. 182. Vienna, 1861.

from the cervix discrete or confluent eminences formed by these organs, and small drops of a thick, viscous, transparent fluid oozing from their orifices; the colour of these little eminences or their orifices is often slightly redder than that of the neighbouring parts of the mucous membrane, but frequently it does not greatly differ from it. Sometimes the follicles, and especially their mouths, are very red as well as prominent: this bright redness contrasts so much with that of the mucous membrane surrounding them, that they might be taken for granulations or papillary eminences analogous to those of granular vaginitis. These eminences may be confluent, like granulations of the cervix; greatly hypertrophied, of a light red or violet colour, complex like acne of the nose with considerable dilatations of the capillary network, or of the superficial venous network; but usually they are discrete and scattered, and by this character, which attracts the attention of the physician, the differential diagnosis between these two diseases is facilitated. On pressure purulent mucus is seen to escape, in the form of a small yellow drop; each small eminence then forms a well-marked red border round each little drop that escapes from its summit, *i. e.* from its centre.

This malady is quite distinct from the uterine granulations already described.

The other pustular diseases of the cervix are very numerous, and are the most common origin of ulcers properly so called. Usually they consist in the development of a great number of small, contiguous, confluent pustules, easily torn, and exuding pus as in *impetigo*, and becoming the starting-point of a purulent secretion renewed incessantly on a base which is ulcerated and complicated by granulations, folliculitis, mucous hypersecretion, &c. At other times they present the appearance of isolated pustules, broad and flat, resembling those of *ecthyma*, and terminating at times like the preceding; but this form is much rarer than the other. It is probable that, independently of eruptions due to disordered local vitality, various eruptive forms are developed on the cervix under the influence of a diathetic affection. The mucous membrane of the cervix resembles the skin as regards herpetism and scrofula. As for venereal affections I may say that I have seen every kind of syphilide on the cervix, from *erythema*, small circular patches, red and like *rubeola*, *maculæ*, *spots*, &c., to *pityriasis*, *psoriasis*, *flat pustules* and *tubercles*. In examining women in whom the uterus is supposed to be healthy, as well as those in whom it is diseased, we cannot fail to meet with these various eruptive forms, sometimes isolated, sometimes coexisting with a uterine malady, or partly assuming another form, or complicated with granulations or ulcers.

2. *Ulcers of the Cervix*

Ulceration of the cervix is one of the most common diseases of this organ, in spite of what has been said by Robert Lee, whose statistics are opposed to those of West. I may say that my own experience has

confirmed the results arrived at by West, and has justified the opinion that ulceration of the cervix is a morbid condition of great importance in uterine pathology. The following are the results of some statistics on the frequency of ulcerations of the cervix, relatively to uterine and other diseases.

Compared with uterine diseases we find :

According to my experience .	425	ulcerations out of	1563	uterine diseases.
„ „ H. Bennet ¹ . .	222	„ „	300	„ „
„ „ West ² . . .	17	„ „	29	„ „

Compared with other diseases we find :

According to West . . .	17	cervical ulcerations in	65	autopsies.
„ „ D. S. Stewart ³ .	15	„ „	50	„
„ „ Aran ⁴ . . .	1	„ „	10	„

Diagnosis—subjective signs.—Superficial ulcerations or erosions, exulcerations and fissures generally pass unperceived, like the eruptions which have given rise to them. Ulcers properly so-called may exist for a long time without having determined leucorrhœa, menstrual disorders, local pain, or general disturbance of the health which would have attracted attention to them. This usual, though not constant, tolerance of the organism with regard to recent uterine ulceration makes the description of the symptoms which characterise it difficult. The frequency of complications is another cause which increases the difficulty. It is seldom indeed that ulceration exists alone for any length of time. When it has lasted for some time and is at all extensive, there is at least leucorrhœa. All the follicles contained in the ulcerated tissue and those of the neighbourhood are attacked by a morbid irritation, which determines on their part a hypersecretion the products of which are added to the pus secreted by the surface of the ulcer. I do not speak of congestion, fungosities, softening, hypertrophy of the organ, metritis, nor of other complications or concomitant morbid states giving rise to special symptoms previously enumerated. I try to distinguish the special symptoms of the ulcer from those which, although they may have first attracted attention to the uterine malady, may depend only on complications. Now in those cases in which I have not had to separate the ulcer from any other concomitant morbid state, but have treated it directly without being first obliged to resort to leeching or other medication, I have almost always found that patients had few local symptoms. These appear to be limited to lumbar and inguinal, or rather femoral pain shooting down the thighs to the knees ; as a rule, there is no hypogastric pain ; sometimes there is pain in coitus or for

¹ Op. cit., p. 37.

² Op. cit., 1st edition, p. 119, omitted in 4th edition.

³ H. Bennet, Op. cit., *Appendix, Uterine Pathology in India*, by D. S. Stewart, p. 587.

⁴ Op. cit., p. 485.

a day or two afterwards; sometimes after sexual intercourse there is a slight discharge of blood mixed with the leucorrhœa, and if the ulcer is fungous, there may even be hæmorrhage, more or less abundant but always limited in duration. The general symptoms are usually more marked. Without presenting anything very special, they almost always attract attention to the uterus, even when there are no local symptoms. Amongst those which are common to all uterine diseases, disorders of the digestive functions I think occupy the first place in cases of obstinate ulceration. Patients almost always complain of dyspepsia; they are languid and their suffering is increased by emaciation, anæmia, paleness, and the peculiar alteration of the features which has been designated by the name of *facies uterina*. These symptoms, however, it will be seen, merely attract attention to the uterus and to the necessity of examination by speculum, which is indispensable in order to determine the existence and character of the lesion. The objective signs alone allow of a diagnosis being made.

Objective signs—I. *Diversity in the form of cervical ulcers*.—Cervical ulceration is seldom deep. Its existence is manifested by the condition of the surface rather than by the loss of substance. The ulcers which least alter the aspect, form or structure of the cervical mucous membrane are erosions, exuberations, fissures. Next in order come ulcerations proper, some of which are distinguished by an exuberance of tissue, others by a more or less sensible loss of substance. In the former category are granular, vegetating, fungous, varicose ulcers and generally those depending on chronic metritis, uterine catarrh, or merely on pregnancy; in the latter, excavated ulcers, those with greyish base, indurated ulcers, ulcers with callous borders perpendicular to the surface or detached from it, corroding ulcers and generally those which are kept up by a diathetic affection.

Fissures are chiefly found where the cervix has been lacerated by previous labours, and they are situated at the base of these old lacerations. Thence they may extend, forming, on a more or less considerable portion of the cervix, exuberations which have a continual tendency to increase. When erosion of the cervix is left to itself for some time, or exposed for several months to the deleterious influence of external causes, *e.g.* want of cleanliness, venereal excesses, abortions, or repeated deliveries, it becomes transformed into an ulceration, at first deep and accompanied by loss of substance, later on filled up by the development of granulations produced either from papillary hypertrophy, or rather from true cicatricial granulations which rise from the base and soon project beyond the smooth and healthy surface of the cervix. The hypertrophic tendency of these granulations is sometimes so considerable, that the ulcer may pass from the granular to the vegetating form, presenting excrescences of from 3 to 5 millimetres in height of dark red colour similar to that of uterine granulations, formed like them and like true granulations of a very delicate and very vascular fibro-plastic tissue, often very near together, separated by hollows, protruding more or less over the irregular border of the ulcer, sometimes projecting into the cervical cavity, giving rise to

a very abundant purulent secretion requiring immediate treatment. As soon as discovered they should be treated energetically.

Scanzoni¹ says that varicose ulceration is one of the forms least frequently seen. It is only developed after a chronic stasis of blood, within the uterine walls. The ulceration is consecutive to congestion of the organ; not only is its colour bluish red, like that of the genital organs when gestation is advanced, but its surface is traversed by varicose veins. "In one case," adds this writer, "such an erosion was traversed by a vein about half an inch in length and dilated to the thickness of a crow's quill, from which there was discharged about two ounces of blood when we opened it."

The ulcers kept up by diathetic disorders usually present different forms. The hypertrophic tendency of the uterine tissue may sometimes render them granular or fungous like the preceding; but frequently, in place of being exuberant (*excedens*) the diathetic ulcer is distinguished by loss of substance, by its colour, its consistency and its limits. Thus the base, instead of being granular and exuberant, is depressed, irregular, more or less hard, covered with a thick yellow or greyish secretion, which is sometimes adhesive and pseudo-membranous, at other times, on the contrary, transparent, ichorous, sanious and sanguinolent. The borders, in place of being irregular, ill defined, and concealing the limits of the ulcer more or less, are, on the contrary, well marked, of a bright red, contrasting with the base of the ulcer as well as with the neighbouring tissues, following a regular curve, or ragged and spreading unequally in various directions, now detached, soft and pale, now adhesive, perpendicular and hard.

II. *Diversity in the nature of cervical ulcers.*—With regard to their nature, cervical ulcers depending on disordered local vitality, whether physiological or pathological, are easily distinguished from ulcers depending on general diathetic disorders.

1. Amongst the former, depending on an alteration of local vitality, one of the most remarkable is the ulcer produced or kept up by *pregnancy*. It is difficult to know whether pregnancy is the only cause of these ulcerations. It is probable that many of them are really due to the existence of some general undetermined affection or to a special tendency of the uterine tissue to become ulcerated as an effect of the special irritation or the epithelial maceration caused by the leucorrhœa produced by pregnancy. Pregnancy, however, by congesting the cervix with the rest of the organ, and especially by softening it and modifying its nutrition, has determined ulceration, even if it has not predisposed to it.

However that may be, it is all the more important to pay attention to these ulcerations, as they seem actually to have produced abortion in some cases.

The ulcer produced or kept up by *uterine catarrh* is recognised by the existence of a concomitant uterine leucorrhœa and by the presence in the midst of the granulations of inflamed hypertrophied follicles,

¹ Scanzoni, *op. cit.*, p. 212.

producing an abundant hypersecretion. It is usually granular, sometimes even fungous, and except at the commencement, when it is only slightly raised and has a velvety or strawberry aspect, the surface becomes irregular and broken, owing to the inequality in the size of the granulations; the fluid pellicle which covers it is not only purulent, but viscous, more or less tenacious and adherent; usually the ulcer cannot be laid bare nor made to bleed without wiping it well. Nevertheless we cannot cure the ulcer by merely curing the leucorrhœa; unless the means of treatment, such as the introduction of nitrate of silver, be sufficient to modify profoundly the surface of the ulcer as well as the uterine cavity.

Ulceration determined by the persistence of *chronic metritis*, especially of parenchymatous metritis, whilst occupying an important place in the production of cervical ulcers, is far from being as frequent as is represented by modern gynæcologists who describe cervical ulcerations as the termination of metritis. Sometimes indeed their parts seem to me to be reversed, and especially in cases where the metritis is confined to the cervix, we may regard it as being as often the effect as the cause of ulceration.

2. Amongst ulcers depending on *general diathetic alterations* we may first of all distinguish *herpetic* ulcers, which may be recognised at the outset by the appearance of one of the eruptive forms which I have described as originating them; later on, by the formation on the borders or in the neighbourhood of the ulcer of vesicles, phlyctenes and pustules analogous to those from which they sprang. *Scorbutic* ulcers, which occur but seldom, are violet in colour, fungous, soft and bleed easily; they are also engorged and œdematous at the base or at the part surrounding the cervix. *Scrofulous* ulcers have their edges detached and slimy, often spreading considerably over both cervical lips. Like most of the others, with the single exception perhaps of leucorrhœic ulcers, they are not confined to the posterior lip of the cervix, and they seem to be as common on the anterior as on the posterior lip. They secrete pus abundantly, which is often unhealthy, serous or sero-caseous. It would seem as if from their borders and from the anfractuositities hollowed out below them there flowed a thick pus, condensed by its prolonged sojourn in these crevices and from which the serous part has already been discharged. I think it is this thickened pus, mixed with fragments of tissue separated by the progress of ulceration, which has sometimes been taken for tuberculous matter.

Syphilitic ulcers are rare on the cervix when compared with their frequency on the vulva and other parts; they are not, however, rare absolutely. I have frequently seen chancre of the anterior lip determine by contagion, after the lapse of a few days, the appearance of a chancre on the corresponding part of the posterior vaginal wall which is constantly in contact with this portion of the anterior lip and on no other part. I have seen women who were accused of having infected men with whom they had had intercourse, and in whom I could not

discover any ulcerated or chancrous surface, any syphilitic symptom or even any morbid symptom, with the exception of a leucorrhœic drop escaping at intervals from the os uteri.

After a few days I have seen the circumference of this orifice gradually attacked from within outwards by a chancrous ulceration commencing evidently in the cervical cavity and gradually extending to one of the lips; I have collected six well-authenticated cases of this development of intra-cervico-uterine chancre. Chancres of the cervix have the same appearance that they present on other parts of the genital mucous membrane; they are seldom indurated; they have perpendicular edges, on a greyish base, are sometimes diphtheritic, or at least covered with a thick, hard, adhesive pseudo-membrane, and have apparently a phagedenic tendency. Lastly, the *cancerous* ulcer, variable in form with edges usually hard, unequal, friable and bleeding, with an ichorous rather than a muco-purulent secretion, presents characteristics so well marked that I cannot dwell on them here; they will be described when we come to Cancer of the Uterus.

III. *Diversity of the ulcerative or destructive tendency of ulcers of the Cervix.*—Superficial ulcers, slightly granular exulcerations, erosions produced by the various eruptions previously described, have frequently a natural tendency towards cicatrisation and may be called non-malignant. Simple granular or even fungous ulcers, those due to pregnancy, leucorrhœa or chronic metritis, frequently also diathetic ulcers, although not naturally tending towards cicatrisation but on the contrary to further development, may also be ranked as non-malignant because prompt and energetic rational treatment succeeds in curing them. There are, however, ulcers which, on the contrary, have a destructive, fatal tendency, and which may be characterised as malignant. Cancerous abscess may be placed in the front rank; they are easily distinguished from others. Are these the ulcers described by Clarke and Levers as *the corroding ulcer of the os uteri*? I am inclined to think with Kiwisch and Scanzoni¹ that it is so; Rokitansky,² however, describes a corroding ulcer of the uterine orifice which is similar to the phagedenic ulcer of the skin. “Although it has no neoplasm for a starting point,” he says, “yet it gradually destroys the vaginal portion or even the greater part of the uterus, destroying at the same time the adjacent tissues as far as the rectum and bladder. It is an irregular ulcer with sinuous, indented outline, at the borders and base of which, from slow inflammation, the tissues are thickened, hypertrophied and hardened. The base is of a dirty green or brownish-green colour, secreting sometimes a small quantity of a viscous purulent fluid, at other times a more abundant and aqueous fluid; it presents no granulations, but a gelatinous exudation, in which the various tissues of the ulcerated surface liquefy.” This description evidently refers, if not to encephaloid or scirrhus cancer, at least to epithelioma of the cervix, and these ulcers may produce considerable destruction of the uterus.

¹ Op. cit., p. 214.

² *Anat. path.*, 1861, t. iii, p. 538.

I have seen several cases of the kind, and they may be found in the admirable works of Cruveilhier and Lebert. But apart from this tendency, which is due to a diathetic affection, may not a similar tendency be developed in a cervical ulcer, especially if syphilitic? I have seen one case so marked that I think the cervix would have been destroyed if I had not arrested the progress of the ulcer by repeated cauterisations and frequent dressings. I willingly reserve the name of *corroding* or *phagedenic* to this form of ulceration.

At other times without having so marked a destructive tendency, the ulceration pursues its course in one direction whilst cicatrisation is obtained in the other, and its existence is thus prolonged indefinitely. In such cases the ulcer may be called *serpiginous*, and should be carefully and energetically treated.

But a well-marked destructive tendency is manifested in the ulcer when it becomes *diphtheritic*. Fortunately this case is very rare, and judging from the description which Boys de Loury and Costilhes¹ give of it they do not seem to have observed it accurately. I think I have seen it as well as the phagedenic ulcer once. However, even when not truly diphtheritic, cervical ulcers may frequently be covered with pseudo-membranes of variable nature, like those on the tonsils, in the mouth and on the pharynx. I share the opinion² of Laboulbène and other practitioners who have studied diphtheritic and pseudo-membranous products, that there are great differences in the nature and degree of maladies presenting this complication. I am convinced from frequent observation that cervical ulcers are also liable to be covered with membranous, pseudo-membranous and even diphtheritic products from the effects of an adynamic and cachectic condition. Without having the extreme gravity of true diphtheria, especially when left to itself, these products always indicate an unfavorable tendency and necessitate active and energetic treatment. They may be distinguished by the difficulty there is in getting rid of the yellowish or greenish layer covering the ulcer. The membrane has to be taken away in fragments with forceps before the base of the hollow bleeding ulcer is seen, which has extended in breadth as well as in depth under the shelter of this false membrane. The neighbouring parts are tumefied, violet red, sometimes livid and the neighbouring ganglia inflamed.

Treatment.—Granular ulcerations of the cervix are never cured spontaneously, and they have a continual tendency to extend and to become fungous when left to themselves; therefore they should be treated, care being taken to fulfil the indications in the order in which they present themselves.

1. The first indication is to treat the general or local cause which produces the ulcer, or which keeps it up. The patient should follow an antidiathetic treatment, the means of which will vary, not only according to the nature of the affection on which the ulcer depends,

¹ *Gazette médicale de Paris*, 1845, p. 374.

² *Recherches sur les conditions météorologiques du développement du croup et de la diphthérie*, p. 35. Montpellier, 1862.

but also according to the condition of the various functions; for the form in which the remedy is administered must vary according to whether the condition of the digestive functions is normal or not. As to the local state, we must not forget that fluxion, congestion, inflammation, hypertrophy or leucorrhœa may complicate the ulcer as cause, effect or simple coincidence. But whatever part these morbid states may play, they should be treated by bloodletting, rest, baths, prolonged irrigations, associated with general and local resolvents.

2. The second indication is to maintain great cleanliness of the ulcer and neighbouring tissues, sometimes isolating the ulcer from the contiguous surfaces. The necessary attentions to cleanliness consist in irrigations with tepid water repeated at least twice a day in order to prevent the fluids which are secreted from remaining in the vagina; sometimes they require to be made every four hours. These sometimes suffice for the cure of erosions and exulcerations. They serve two purposes: by ridding the vagina of the abundant and irritating secretions which accumulate there, they prevent the contact of these fluids from keeping up and increasing the ulceration; by cleaning the ulcer itself, which is irritated and positively infected by its own secretion, they prevent its extension and also the transmission by contagion of the malady to the contiguous mucous surfaces. As a rule, simple irrigations should be made with tepid water in winter and at the temperature of the room in summer. Cold water should be used when the ulcer is fungous or bleeding. These irrigations may be rendered disinfecting by the addition of a little carbolic acid, vinegar, permanganate of iron or chloride of lime. When there is congestion or a tendency to hæmorrhage I prescribe injections to be made three times a day with water as hot as can be borne (112° F.) with one or two tablespoonfuls of a solution of carbolic acid (75 gr. crystallised carbolic acid to a quart of water). These injections often suffice to cure certain kinds of ulcers.

3. The third indication is to modify the surface of the ulcer in such a way as to stimulate its vitality and to produce a tendency towards cicatrisation, a more or less marked resolvent action. A tampon applied every day to the cleansed cervix for a few hours is sometimes sufficient to give a favorable impulse to cicatrisation. At other times an inert powder, such as starch, will produce the same effect; in both cases unless there is no discharge the vagina should be syringed several times a day. The injections may be medicated, but previously to using them a simple or purely detergative lotion should be made.

After having washed and wiped the cervix we may apply a little subnitrate of bismuth, calomel, alum, sulphate of zinc or acetate of lead to the ulcer, and then a spoonful of starch in powder to keep the drug in place, or a tampon will do as well. I generally place the powder on the tampon and then apply it to the cervix, pushing it close against the uterus while I withdraw the speculum, taking care not to allow the powder or fluid to come in contact with the vaginal wall. A

number of drugs are employed in this way. I shall content myself with mentioning alum, tannin, sulphate of zinc, sulphate of copper, nitrate of silver, tincture of iodine, perchloride of iron. Each of these medicaments may answer to a special indication, which may be graduated according to the nature of the lesions. Thus it is sufficient to touch simple erosions with a weak solution of alum or nitrate of silver. When the ulceration is more extensive or deeper, these solutions may be made stronger, and when there is leucorrhœa or excoriation of the vaginal *culs-de-sac*, as frequently happens, these drugs should be left for a few seconds in contact with the diseased surfaces in order to give them time to penetrate sufficiently. After having embraced the cervix with a wooden, porcelain, or glass speculum, and having wiped not only the whole surface of this organ, but the neighbouring portion of the vagina, we pour into the inclined speculum one or two teaspoonfuls of a solution of nitrate of silver (30, 20 or 10 per cent. according to whether we wish to use it as an alterative, a cathartic, or a mild caustic). It is left for a few seconds in contact with the diseased surfaces, then poured out of the speculum by depressing the instrument, what is left being removed with a little cotton wool to prevent any injury to the vagina or vulva. When only the surface of the ulcer requires treatment we simply touch it with the crayon, perchloride of iron or laudanum. These are the agents I use most frequently and find successful. When the neck is engorged, œdematous, or when the ulcer is callous, the tincture of iodine has the advantage of being resolvent as well as cathartic. When the ulcer is fungous, varicose, bleeding, the perchloride of iron (30 per cent.), which acts not only as a caustic but as a powerful hemostatic, is of great use. In such cases I sometimes touch the ulcer with iodoform, creosote or crystallised chromic acid; but these medicaments should be reserved for cases in which destructive action is desirable. When a specific action is required solutions of corrosive sublimate should be used.

We may also have recourse to ointments, though I think they are less efficacious than other applications. If there is pain and hyperæsthesia I use laudanum, as recommended by Aran, only instead of keeping it in place by powdered starch, after pouring in from 15 to 60 drops I introduce a tampon, which I push against the cervix, which the patient removes a few hours afterwards in order to make an injection. In other cases I spread a thick layer of opiate ointment on the tampon and apply it to the ulcer. When I wish to excite a resolvent action I apply in the same way an ointment of iodide of lead and potassium or a glycerole of bromide or iodide of potassium. If specific action is needed as well I use mercurial and belladonna ointment, or ointment of red oxide of mercury, which is extremely resolvent, and in some cases hastens cicatrization. In cases of acne or of ulcer kept up by folliculitis I apply an ointment of the double iodide and chloride of mercury, taking care to protect the vaginal walls, and I treat *acne rosacea* of the cervix like that of the face.

Medicated pessaries are not so good, having the double drawback of not being always pushed as far as the cervix or of not remaining

there, and of acting on the vaginal mucous membrane as well as on the uterus.

4. The fourth indication is to destroy by cauterisation granulations, fungosities, callosities, in fact all pathological tissues. The sulphate of copper and the nitrate of silver are quite insufficient for this purpose, being only applicable to small ulcers, and only curing after a considerable number of cauterisations, and modifying the tissue so slightly that whilst they favour dessication of the ulcer and reproduction of the epithelial covering of its surface, they leave the deeper alterations untouched, or may even increase them by the repeated irritation which their too frequent contact determines in the tissue. What I have just said of nitrate of silver may also be said of more energetic caustics, especially of the various acids, and in particular of the acid nitrate of mercury so much used at present. Their liquid form is also a drawback; in the case of the acid nitrate of mercury there is the additional risk of salivation. The potential cautery, such as Vienna paste, is preferable to the means just enumerated, and would be indispensable in cases in which the size of the granulations necessitates deep destruction, were not the same effect produced with less danger with the actual cautery. Actual cauterisation may be either superficial or deep as required. It should be sufficiently energetic not to make a second application necessary, remembering that the depth of the scar produced is really less than it seems to be. In such cases we must not fear to use more than one cautery to the portion of the cervix to be destroyed, especially if the fungosities of the ulcer are voluminous and bleeding, if the cervix is engorged and hypertrophied, if we require, in short, by suppurative action of some duration and by the cicatricial process which follows to produce absorption of the tissues or interstitial fluids and resolution of the tumour formed by the ulcerated cervix. I have seen ulcers of this kind resist cicatrization so long as to force me to have recourse to the actual cautery every four or five weeks during general and local treatment; but I have never had a case that I could not cure. Actual cauterisation is also applicable to ulcers during pregnancy; double care, however, is required to prevent any subsequent fluxionary movement towards the uterus. When rest, baths and cold fomentations are insufficient the best means of avoiding abortion is to subdue sanguineous fluxion of the uterus by revulsive bleedings of the arm, which may be repeated when necessary, but should not be copious.

Lastly, we must not imagine that all local treatment is finished when we have burned the ulcer. As soon as elimination of the scar commences the physician should direct the cicatricial tendencies of the bleeding surface. In many cases this period is critical, and if a favorable impulse is not given to the cure of this new wound it may relapse under the unfavorable influence which kept up the ulcer, and in a few days become as fungous as before owing to the hypertrophic tendencies of the uterine tissue. The wound should therefore be stimulated to form a good cicatrix in a few days. Lastly, we must be willing to wait for a considerable time after cauterisation before obtaining all the

results that we have a right to expect from it, and we should use the general and local means of which I have so often spoken (especially hydropathy and mineral waters) to forward resolution and to prevent the renewal of ulceration or the development of some other affection on an organ too recently cured not to be liable to a relapse.

CHAPTER IV

ORGANIC ALTERATIONS—FIBROUS TUMOURS—POLYPI AND MOLES—TUBERCLE— CANCER

ORGANIC alterations differ from morbid states without neoplasm in the production of new elements appearing in the form of more or less voluminous tumours, and constituting the most important character of these diseases as regards diagnosis and treatment. These new elements may be the very elements of the uterine tissue or their analogues (homeomorphous tumours), or they may appear to have only a distant analogy with these elements and be developed in the uterus with the same characters which distinguish them in the parenchyma of any other organ (heteromorphous tumours). To the first category belong *fibroids*, *fibromata*, *myomata* and *polypi*; to the second *tubercle* and *cancer*.

FIBROUS TUMOURS

The names *fibrous tumours*, *fibrous bodies*, *myomata*, *leio-myomata*, *fibroids*, *hysteromata*, &c., are used to designate tumours of a fibrous appearance which are frequently developed in the uterine parenchyma. They are excrescences from the uterine walls similar in structure to the uterine tissue. They are also the most common of all organic diseases of the womb.

The name *fibrous body* given by Cruveilhier indicates the nature, the isolation and the independence of these productions, as well as the absence of pediculisation which distinguishes them from polypi.

The expression *interstitial fibrous tumours* is often employed to call attention to their development in the midst of the uterine tissue. The recent names of *fibroids*¹ and *fibromata* designate the principal aspects under which they are usually seen; that of *myomata*² defines their muscular or fleshy texture; whilst that of *hysteromata* (Broca) recalls their nature, which is no other than that of the uterus itself, their development appearing to be due, according to my own observations as well as that of Lebert and Robin, to hypertrophy of the fibromuscular element, of all the anatomical elements that which best characterises the uterine tissue. They are rounded tumours, slightly irregular or nodulated on the surface, formed of greyish fibres or fibrillæ of considerable consistency, closely approximated, encircling a fictitious centre, or it may be several centres closely interlaced, intersected with dull white bands, distinct from the uterine wall in colour,

¹ M. H. Currey, *On Fibroids of the Uterus* (Philadelphia Med. and Surg. Report, March, 1874).

² Virchow, *Die Krankhaften Geschwülste*. Berlin, 1863. He calls them *leio-myomata*, or tumours formed of smooth muscular fibres.

consistency and in the absence of blood-vessels of any size.--They occur at all ages, before 20 and after 80.¹

The site is in relation with the thickness of the uterine wall and the region of the uterus that they occupy.

1. As regards the wall, they may be developed in the central portion, in which case they remain sessile for a long time; or towards the free surfaces, in which case they are generally pediculated. The first class are *interstitial*. Those of the second class have been called *sub-mucous* or *sub-peritoneal*, according to whether they push before them in the direction of least resistance the mucous membrane or the peritoneum; but these expressions are incorrect, for the fact which they seem to imply does not occur: whether covered with uterine mucous membrane or peritoneum fibromata have always a thin layer of uterine tissue over them.² Even the interstitial tumours may become enor-

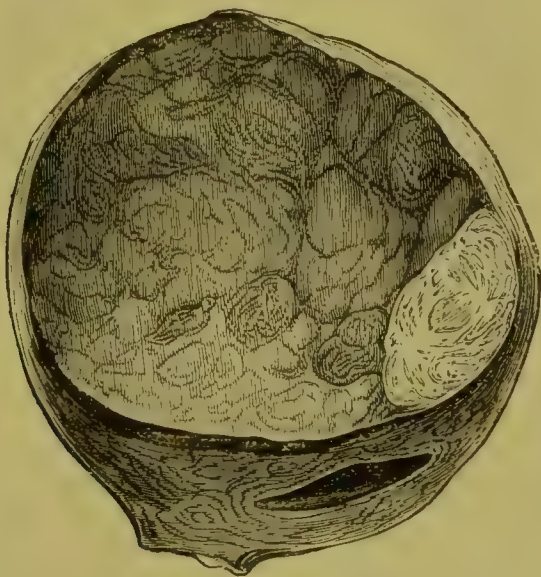


FIG. 358.—Interstitial fibroid (*ad nat.*, Farre).

mous without being pediculated, although they are only separated from the uterine cavity by a thin layer of tissue proper. The uterus necessarily participates in this development, as if it contained a product of conception, a fact which to some extent justifies the expression of *fibrous pregnancy*³ given to it.

2. As regards the region of the uterus, fibromata may arise from any point; they are, however, produced more frequently in the body than in the cervix, almost in the proportion of 110 to 21.⁴ The latter segment may remain intact, whilst the body is loaded with them so as to resemble a bag filled with nuts.⁵

¹ Engelmann (*Zeitschrift f. Geburtsk*, 1877, Bd. i, Heft 1.)

² Cruveilhier, *Anatomie pathologique*, t. iii, p. 667. Paris, 1865. Bayle, *Dict. des sciences médicales*, vii, 72. Paris, 1813.

³ F. Guyon, *Des tumeurs fibreuses de l'utérus*, p. 13. Paris, 1860.

⁴ Safford Lee, *On Tumours of the Uterus*. London, 1847.

⁵ As in an anatomical preparation of Huguier's, quoted by Guyon, *op. cit.*, p. 15.

In fibromata of the body those of the posterior wall are the most frequent, those of the anterior wall come next, and those of the fundus last.¹ Those of the cervix are developed like the latter, and are usually pediculated towards the cervical cavity; they escape from the uterine orifice much more easily than do those of the body.

The *size* of uterine fibroids varies greatly, according to the stage of development and the arrest which the development may undergo; they may be seen from the size of a pin's head to that of the head of an

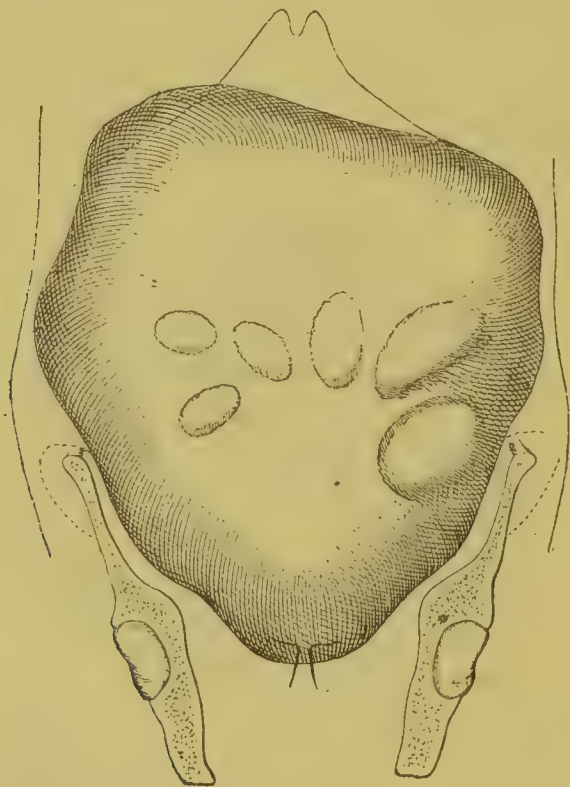


FIG. 359.—Fibroid tumour of enormous size, rising to the hypochondriac region (Graily Hewitt, op. cit., p. 498, fig. 102).

adult. I have seen a patient who had one which could not have weighed less than 50 lbs.² Binz³ examined one which weighed 62 lbs.; Walter one of 74 lbs. It is the same as regards *number*; they may be single or multiple. In the latter case they are usually of various sizes, and they may also be found in the annexes.⁴ They do not occur singly as often as Cruveilhier thinks.

Sub-peritoneal fibromata are sometimes very numerous, while the sub-mucous are usually single, probably from want of room, for ablation is commonly followed by the development of a fresh tumour.

Interstitial tumours are sometimes multiple, one of them generally

¹ Houël, *Manuel d'anatomie pathologique*, p. 596.

² Courty, *Excursion chirurgicale en Angleterre*, p. 58. Montpellier, 1863.

³ *Gazette méd. de Paris*, 1858, p. 807.

⁴ Neugebauer (*Prager Vierteljahrschrift*, Bd. ii, S. 59, 1877).

being larger than the others. Lastly, we may observe fibromata belonging to all these three categories in the same uterus.

The *form* is usually spherical; it may, however, assume various and curious shapes, *e.g.* pointed, bilobed, owing to the entrance of the tumour into the neck, or irregularly nodulated when a number of tumours are fused together.

The *texture* is very dense; the dull white or mother-of-pearl tissue is one of the most resisting that is known. The tumour is chiefly composed of amorphous matter finely granulated, fibrous or fibro-plastic elements and muscular elements, or smooth muscular fibre-cells which are larger than in the empty uterus but smaller than in pregnancy,¹ and which form a quarter or a half of the mass of the tumour. This composition, however, may vary according to the starting point of the hyperplasia and the predominance of any particular element: hence fibromata properly so-called, fibroids (in which the embryonic element predominates), fibro-myomata, or hard myomata (the most common), soft myomata (in which the muscular fibres and sometimes the vessels predominate, the connective tissue being thin and loose), vascular or telangiectatic myomata, cystic myomata, myo-sarcomata,² &c.

Evolution.—We must distinguish in fibromata a primary state of development and a secondary state in which they live their own life.

a. Owing to our ignorance as to the commencement of the evil (from knowing only large tumours), it was believed that there was a want of primordial continuity between the myoma and the uterine tissue (Bayle, Cruveilhier). But after histological researches had proved the identity of the fibres of the myoma proper with the muscles of the uterus,³ these tumours, which at first were thought to be developed in an interposed blastema were then regarded as resulting from local hypertrophy,⁴ and at a later period as being all special hypertrophic forms of the uterine parenchyma.⁵ This connection is so close that sometimes it is impossible to limit even large tumours, especially if they are soft. Fibromata therefore seldom appear to be formed by the interstitial development of elements similar to those in the midst of which the fibro-plastic tissue is produced or their formative blastema deposited, but more frequently by the proliferation of a limited group of uterine fibres, which become isolated from all the others just as adenoid tumours are developed in the glands, heter-adenomata in their neighbourhood, pigment in the choroid,⁶ &c.

¹ Vogel, *Erläuterungstafeln zur pathologischen Histologie*. Leipsic, 1843.—Oldham, *Guy's Hospital Reports*, 1844.—Lebert, *Société de biologie*, 1852, p. 68. *Anat. pathol. gén.*, pl. 157, 32^e liv., 1859.—Robin, *Thèse de Ferrier*, 1854, p. 41.

² Virchow, *Die krankhaften Geschwülste*. Berlin, 1863, Bd. iii, S. 310, *et seq.*

³ Vogel, *Icones histol. pathol.* Leipsic, 1843.

⁴ Simpson, *Obstetric Mem.* Edinburgh, 1855, vol. i, p. 115.

⁵ Virchow, *Wiener med. Wochenschrift*, 1856, No. 7.

⁶ An example of the law of homology or analogy of formation.—Vogel, *Anat. path. gén.*, p. 100. Paris, 1847.—Courty, *Substitutions organiques*, p. 33. Paris, 1847, and *Gazette méd. de Paris*, 1847.

Their origin seems to be a swelling of certain bundles of muscular fibres at a given point analogous to the tumefaction of nerves in neuroma.

b. The life of fibromata may be said to be a parasitic one as soon as they are isolated from the tissue from which they have taken birth. The anatomical independence which they then acquire as regards the uterine fibres, the feeble vascularity which they enjoy, the capillarity of the vessels by which their periphery communicates with the rest of the womb, all concur to prove their physiological independence. It is easily ascertained that, with the exception of some adhesions abnormally established, they have no continuity with the tissue of the womb, but are separated from it by a loose cellular tissue as if by a cyst, sometimes by accidental serous bursæ.¹ Sometimes even the nutrition of fibromata takes place by imbibition; it is probable that it is so when they seem to be contained in an envelope or a kind of sac which isolates them in every direction; it cannot be otherwise when they are perfectly free in the abdomen with-

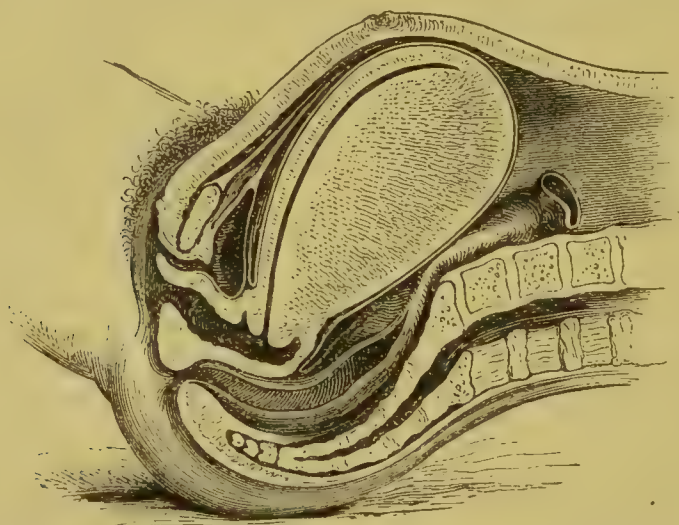


FIG. 360.—Large fibrous interstitial tumour of the uterus, making the size of this organ equal to that which it acquires at full term (Sims).

out on that account experiencing any alteration, and even without ceasing to grow, which is accounted for by their being protected from contact with the air and from the obscurity of their life. The growth of fibromata is unlimited; it is very variable according to whether their development is rapid, slow, stationary or even retrograde. It is not rare to meet with an interstitial fibroma the size of which is equal to that of a foetus of seven or even nine months. Occasionally they are seen still larger (see p. 650, and Figs. 359 and 360).

Amongst the alterations which they may undergo the most uncommon is atrophy by retrograde evolution. Soft myomata may become indurated in consequence of inflammation; their muscular fibres disap-

¹ Verneuil, Fenerly; *Bulletin de la Société anatomique*, xxxix, 346.

pear, they become fibrous and may even assume a cartilaginous aspect. The density of the tumour increases much more when the fibres composing it become encrusted with calcareous matter and when the fibroid undergoes petrification. This petrification, to which the name of ossification has been given, may occur in two ways, either by a simple peripheric encrustation forming a kind of shell¹ for the fibroma, or more frequently by a general calcareous infiltration, by the formation of multiple concretions in the interior of the tumour,² and the petrification of the whole of the fibrous body. The stony hardness of the whole mass may be great enough to allow of its being polished, as was done with one in the Middlesex Hospital Museum. The uterus sometimes contains such stones of considerable size and enormous weight. I have seen one that weighed 22lbs. Arnott³ mentions another of 50lbs. weight, which caused death in an old woman by tearing the intestine in a fall. Cruveilhier regards the petrification of fibrous bodies as a kind of atrophy, an opinion which seems shared by Louis,⁴ who says that the calcareous transformations of fibromata occur chiefly after the menopause.—Another kind of atrophy is the regressive fatty transformation of the muscular fibres, which modifies in an opposite manner the consistency of fibrous tumours, softening them, and giving them a yellowish coloration and determining their partial liquefaction and the formation of cavities. This transformation (which bears some analogy to the retrograde evolution which brings back the uterine fibres from the state of pregnancy to that of vacuity) may promote the gradual diminution in size and even the disappearance of myomata, either spontaneously or under the influence of rational resolvent treatment. West draws attention to the analogies which may be established, from this point of view, between a myoma and a tuberculous bronchial ganglion, both being capable of undergoing softening as well as calcareous induration. West also thinks, and I share his opinion, that absorption of a myoma without notable alteration of the tissue is not impossible, but might take place by regressive evolution as opposed to the progressive evolution which has given it birth.

Fibromata may be attacked by softening, liquefaction and suppuration. Sometimes they are red, the whole tumour appearing inflamed; they become œdematous, fluctuating, giving rise to a collection of serosity, blood and pus, very difficult to diagnose and threatening to terminate by dangerous peritoneal rupture, or they may become separated towards the uterine cavity by a kind of maceration in the san-

¹ Bourdillet presented a specimen to the *Société anatomique*; the patient had been in M. Mauriac's ward in the *Hospice des Ménages*.

² Michel Morus counted thirty-two calcareous nuclei in a fibrous tumour. Louis, R. Lee and Velpeau have also mentioned remarkable cases of the same alteration (Trumet, *Thèse sur les tumeurs de l'utérus*, p. 76. Paris, 1851). Ashwell mentions four cases in the *Gazette hebdomad.*, 1854, p. 410.—Louis Mayer and Lehnerdt each describe a new case (*Monatschrift für Geburtsk.*, 1869, Bd. xxxiii, S. 241).—Also Lumpe (*Gazette hebdomad.*, 1860, p. 716).—And Mordret (*Annales de gynécologie*, t. xi, p. 135).

³ *Médec.-Chirurg. Transactions*, xxiii, 1840.

⁴ *Concrétions calculeuses de la matrice*.—*Acad. de chir.*, v, 1.

guineous fluids which bathe them.—Sometimes they are only partially attacked by inflammation, softening, suppuration or gangrene, either on the surface or in the centre, where a cavity is hollowed out, compared by Cruveilhier¹ to an eagle-stone.—When clustered together, cysts, either single or multiple, may be developed in the tissue between the fibromata, which may acquire a great size and become the seat of hæmorrhage or suppuration and even be taken for ovarian cysts.—

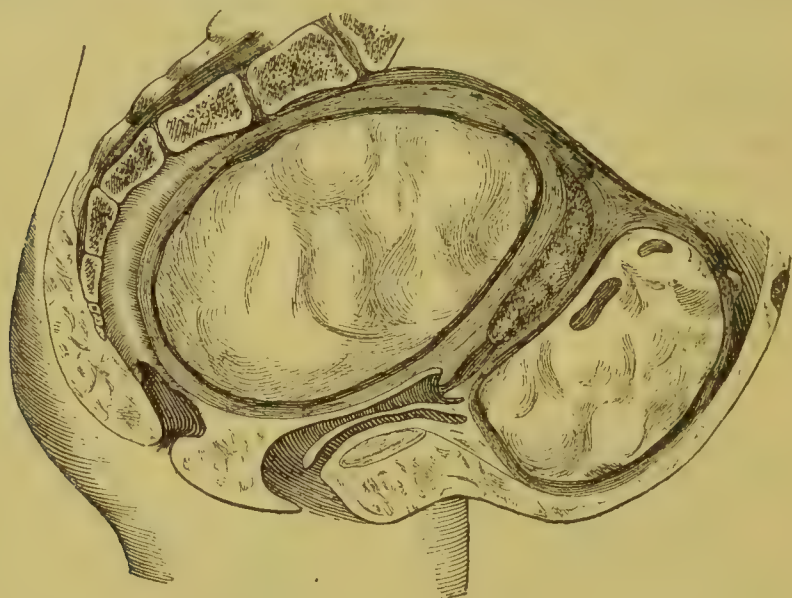


FIG. 361.—Uterus, containing an ovum with an embryo of about two months, compressed between two fibromata, a large posterior pelvic one and a smaller anterior hypogastric one. The patient was operated upon: she died thirty hours afterwards (Barnes, *Études cliniques sur les tumeurs rétro-utérines*, in *Annales de gynécologie*, t. ix, p. 443. Paris, 1878).

Cancerous degeneration has not been observed in fibroma. It may be propagated from the neighbourhood, but is never developed there in the first instance; and fibroma and cancer very seldom coincide.

What influence do fibromata exercise on *fecundation*, *pregnancy* and *delivery*?²—There is no doubt that the presence of myomata diminishes the number of conceptions and increases that of abortions and miscarriages. Out of 605 patients (of whom 500 were married and sterile or had become sterile) seen by Marion Sims, 119 had fibrous tumours (not including cases of polypi).—Pregnancy is not impossible, but it seldom follows its normal course: whether the presence of the fibrous tumour prevents the free development of the uterus or whether it determines hæmorrhage it often causes abortion.—Delivery may be impossible; it is always difficult, dangerous, complicated, and it exposes to troublesome consequences. According to Tarnier,³ out of

¹ *Anat. path.*, liv. 13, pl. 6.

² Foch, *Des hystéromes au point de vue de la génération*. Thèse de Paris, 1874.—Lefour, *Des fibromes utérins au point de vue de la grossesse et de l'accouchement*. Thèse de concours pour l'agrégation. Paris, 1880.

³ *Société de chirurgie*, Feb. 10, 1869.

42 cases, delivery only terminated spontaneously 8 times; it required the use of forceps 6 times, version 6 times, induction of premature labour once, embryotomy once, enucleation of the tumour once, Cæsarean operation 14 times; the malady caused death 5 times before delivery (of these 42 patients only 13 were cured); sessile fibromata are displaced with the uterus; their ascension at the time of delivery is produced by the contraction or shortening of the longitudinal fibres; they are therefore less dangerous at this time than pediculated tumours; but they expose more to hæmorrhage afterwards; patients who escape may succumb to metro-peritonitis, to softening, to suppuration developed not only in the uterus but in the fibromata themselves (Bayle, Lisfranc, Barnetche).

What influence does pregnancy in its turn exercise on the development of fibrous tumours? ¹ In spite of the interest which Guéniot imparted to this question by showing that, apart from the influence of pregnancy, a fibroma may be attacked by hypertrophy, softening and suppuration, we must admit with Ashwell, West, Virchow and all pathologists, that pregnancy is one of the conditions which most promote the development of these tumours. My experience accords with that of Guyon, Bailly and others, that there is no doubt that the increase in the size of myomata takes place at the menstrual period and during pregnancy; it is the same with their softening and change of position; but it is more doubtful whether they resume their former size and still more whether they become atrophied in following the retrograde evolution of the organ after parturition. In speaking of the termination of these tumours I shall, however, mention cases in which they have disappeared after delivery, and even during pregnancy, according to some writers.

Diagnosis—signs common to fibromata—subjective signs.—The first symptom which the patient notices is metrorrhagia, sometimes neither preceded by local pains nor by fatigue. The loss of blood usually coincides with the menstrual period, in the beginning at least, and is therefore menorrhagic; at other times, or at a later period, metrorrhagia occurs. Excessive menstruation and hæmorrhages in the intercalary period are, in half of the cases at least, the first symptoms which betray the presence of a fibroma. ² In women who have ceased to menstruate hæmorrhage is also frequently the first symptom. It sometimes alleviates the acute lumbar pains from which patients suffered and gives a false confidence by misleading them as to the real cause of this loss of blood. The hæmorrhage depends on the fluxion which the

¹ See Forget, *Recherches sur les corps fibreux et les polypes de l'utérus considérés pendant la grossesse et après l'accouchement*, in *Bulletin gén. de thérap.*, 1846.—Forget, Guéniot, Tarnier, &c., Discussion on the same subject in *Bulletin de la Société de chirurg.*, 1868, 1869.—Em. J. Lambert, *Essai sur les grossesses compliquées de myomes utérins*. Paris, 1870.

² In 88 women suffering from myoma before the menopause, West (op. cit., p. 272) observed 45 cases of disordered menstruation, either as to frequency or abundance, or both simultaneously; 15 cases of dysmenorrhœa, 4 of diminution in the quantity of menstrual blood, and 44 cases of hæmorrhage occurring in the intercalary period.

increase of the fibroma keeps up in the womb and on the alteration of the uterine mucous membrane owing to the presence of this organic lesion. It increases when the fibrous body, in place of remaining interstitial, has become pediculated, being a still more prominent symptom in the history of polypi than in that of fibroids. Expulsive hypogastric pains accompany the menses. They sometimes extend to the hips and thighs, and especially along the sciatic nerve. There is also dull mechanical pain, pelvic fulness, weight, painful pressure on the sacrum, dragging in the groins and loins. Earlier or later leucorrhœa supervenes, being sometimes a mucous, glairy, transparent or opaque discharge, sometimes sanguinolent or purulent, its viscosity indicating that it comes from the uterine cavity. This glairy discharge is very abundant in some patients.

Dysuria, vesical tenesmus or complete retention of urine, produced by the pressure, elevation or dragging of the bladder by the uterus, may occur in the beginning or when the fibroids have attained a certain size or are situated in the periphery. These symptoms are very common, as West has noticed them in 21 patients out of 40; according to Hervez de Chégoin, they may even be the first that are observed. They are often remarked before constipation. The difficulties of defecation, especially when marked, may be said to be less common than those of micturition. Constipation may not even exist: is this the result of the normal anteversion of the uterus or is it, as Clarke¹ thought, because the tumour does not correspond in its form to the shape of the pelvis, and being prevented by its size from entering the cavity, rests on the pubis and on the promontory, without either compressing the rectum or the sigmoid flexure which is to the left? Constipation may, however, become so complete as entirely to prevent the normal passage of fecal matter, determining symptoms of strangulation. This occurs especially when the fibroid has become stony. Nélaton,² in a case of absolute constipation in which the rectum was so flattened that no sound would pass, performed the operation for artificial anus as the only means of prolonging the life of the patient, who lived for eight days. I have seen analogous cases. Alterations of the neighbouring organs may extend much farther. Strange displacements have been described, *e.g.* the rectum pushed to the right, the bladder on one side or the other, or extending upwards as far as the navel; gradual wearing away and perforation of the bladder and rectum have been seen. Soir³ has seen a fibrous tumour the size of the fist perforate the uterus and linea alba, and escape through the gangrenous skin of the hypogastrium in the form of a black and fungous mass.

Objective signs.—The speculum is of no use in the diagnosis of a fibroma. Palpation permits the assumption of the existence of these organic alterations, especially when much developed, multiple or projecting towards the peritoneum, when they give a nodulated form to

¹ *Observ. on Diseases of Females*, i, 279. London, 1821.

² Guyon, *op. cit.*, p. 49.

³ *Mém. de la Soc. de chirurg. de Paris*, 1851.

the uterus or are distinctly perceived round this organ. Vaginal touch, however, is infinitely superior to the two preceding means of exploration; associated with palpation, rectal touch and the use of the sound, which serve as complementary or auxiliary means, it alone can lead to a certain diagnosis.

The association of touch and palpation with the use of the sound not only allows the difference in thickness of the two uterine walls to be appreciated; the mobility of the catheter and the direction in which it is carried, the reverse of the natural or apparent situation of the organ, show that the uterine cavity is both enlarged and deformed. Vaginal touch should be practised in different attitudes and at various times, especially during menstruation and metrorrhagia, when the cervix is open; for fibrous bodies and polypi present themselves at the orifice at these times, returning into the uterine cavity afterwards. In order to facilitate digital touch we may, like Simpson, dilate the cervix with sponge tents, only we must be prepared to act immediately in case of hæmorrhage, either injecting iodine, giving ergot, and plugging if we have to do with an interstitial fibroma, or operating if the fibroma is pediculated.

When a fibroma by its size and weight can overcome the natural means of fixity of the uterus, it forces this organ to incline towards the side which it occupies, more frequently in lateroversion than in anteversion and especially than in retroversion.

When of considerable size the influence of volume is greater than that of weight: instead of bending the uterus to its own side it pushes it to the opposite side, taking its *point d'appui* on some portion of the pelvic cavity, the sacrum, the cotyloid surface or the margin of the coccyx. If it becomes so large as no longer to be contained in the pelvis it is forced to rise into the abdominal cavity, dragging the uterus with it, thus producing the opposite condition to the prolapsus which the presence of the fibroma had produced in the beginning.

II. *Distinctive signs of interstitial, sub-mucous, and sub-peritoneal fibromata.*—*Interstitial fibromata* present different symptoms, according to whether they are situated in the fundus of the uterus, enlarging its dimensions transversely, or occupying the walls and increasing its cavity longitudinally. Those of the fundus may completely reverse the position of the uterus, making the exact limit between the tumour and the uterus very difficult to define; sometimes the fundus of the uterus remains thick, whilst the layer which covers the fibroma on the side of the uterine cavity is so attenuated as to make spontaneous enucleation possible, of which Barth,¹ Bernutz,² and several other writers have given examples; at other times the fundus of the organ is so equally divided, that the uterine cavity is preserved and may become the seat of a pregnancy, as in the cases mentioned by Cruveilhier,³ and by others.⁴ Those of the walls are less favorable to the

¹ *Bulletin de la Société anatomique*, 1850, p. 82.

² *Gazette hebdomad.*, 1866, p. 763.

³ *Anat. pathol.*, ii^e liv., p. 45.

⁴ Ingleby, *Gaz. méd.*, 1839, p. 73.—Pillore, *Gaz. des hôpit.*, 1854, p. 547.—

accomplishment of the uterine functions ; they may be prolonged into the cervix where they can be reached by operation, they may efface the cavity of the body by pressing together the mucous membranes of the two uterine walls in their whole extent, or these membranes may even become inflamed, ulcerate and adhere together at several points.¹ The continuity of the myoma with the fibrous bundles, the muscular trabeculæ and the vessels persisting longer here than in sub-mucous and sub-serous myomata, it is not surprising that these interstitial tumours attain a larger size than the others, sometimes simulating pregnancy. The entire wall of the uterus is in a condition analogous to that of pregnancy, the muscular fibres are hypertrophied, the vessels dilated, the mucous membrane hyperæmiated.² Sometimes on the contrary, the uterus is atrophied ; then the myomata are small, they become indurated and calcareous ; occasionally they become very large ; in these cases the atrophy of the uterus seems to be produced secondarily.³ Interstitial fibromata whether simple or compound, most frequently occupy the posterior wall of the uterus which is normally the thickest. They produce in the womb changes of size, form, situation and capacity presenting the greatest varieties.

Sub-mucous fibromata.—Though seldom multiple, they may coincide with intra-parietal and sub-serous myomata ; but when at all large, they are seldom accompanied by important intra-parietal tumours. When voluminous, they may adhere to the uterus by a broad base, it being impossible for them to become pediculated or to descend into the uterine cavity without dragging after them the fundus of the uterus. Usually, however, before appearing at the orifice, they are sufficiently separated from the uterine wall to be only adherent by a pedicle like a cord of variable resistancy, very distinct from the tumour and apparently holding it suspended from the womb and liable to spontaneous rupture. One of the most important points to be decided with regard to treatment is whether there is a broad base or a pedicle. Scanzoni used to seize the portion of the tumour visible at the orifice with Museux's forceps and try to impart movements of rotation to it, which could only be possible in the case of a narrow pedicle. The migration of sub-mucous fibroids provokes very characteristic changes in the uterus. It excites in the mucous membrane an irritation producing softening, injection, hæmorrhages, œdema, a muco-sanguinolent or muco-purulent secretion ; the uterine cavity is increased in its vertical diameter, whilst the two opposite surfaces are placed more or less in contact with each other ; in the end the cervix

Leguerie, *Gaz. méd.*, 1854, p. 412.—Weber, *Monatschrift für Geburtsk.*, 1864, Bd. xxv, S. 157.—Ostertag, *id.*, *id.*, Bd. xxv, S. 317.—Spiegelberg, *id.*, *id.*, Bd. xxviii, S. 426.—Lorimer, *id.*, *id.*, Bd. xxix, S. 394.—Guéniot, *Des tumeurs fibreuses de l'utérus pendant la grossesse et l'accouchement*. Paris, 1868.

¹ Chassaignac, *Bulletin de la Société anatomique*, t. xviii, p. 10.

² Carl Venzel, *Die Krankheiten des Uterus*. Mayence, 1816, Taf. xi, A, B.—Hooper, *Morbid Anatomy of the Human Uterus*, pl. v, A, H.—Robert Lee, *Medico-Chirurg. Transact.*, vol. xix, p. 122, pl. ii.—Lebert, *Traité d'anat. pathol.*, Atlas, pl. clvii, fig. 2.

³ Walther, *Ueber fibröse Körper*, S. 16.

becomes softened, shortened and reduced to a simple ring, as in the last months of pregnancy, the os being enlarged to allow the fibroid to pass.

Sub-peritoneal fibromata.—In place of presenting the characters of uterine tumours like the two preceding, they have those of abdominal tumours as regards situation and symptoms. The symptoms vary according to the part of the uterus from which they have originated, the portion of the abdomen where they are situated, the volume which they acquire, the transformations which they undergo. They may cause errors of diagnosis and real danger from these various points of view. The origin of subperitoneal fibromata is near the peritoneum or just below this membrane. These tumours remain attached to the uterus, and if largely developed, the womb appears to be only an appendage to them (*see* fig. 362); they project more or less consider-



FIG. 362.—Uterus surrounded and surmounted by pediculated sub-peritoneal fibroids (*ad. nat. Farre*).

ably towards the pelvis or abdomen, even the largest being seldom completely freed from the uterine tissue. Some, however, end by being only connected with the uterus by a long and narrow pedicle; Martin¹ has seen one weighing 6 lbs. connected with the uterus by a pedicle two inches long and one wide; Gaubric² found in the right iliac fossa a tumour reaching to the gall bladder, attached by a thin pedicle to the right half of the cervix; Cruveilhier³ saw a fibroid 11 lbs. in weight connected by a long pedicle of the diameter of a quill pen with the right superior angle of the uterus. They seldom appear singly, they coexist with intra-parietal or with internal myomata. They are usually hard, having a tendency to become calcareous, probably by muscular atrophy and arrested nutrition. These fibroids may even be detached spontaneously from the uterus and continue to live either completely free in the abdomen, or fixed by accidental adhesions; in such cases there was necessarily rupture of the pedicle. They often give rise to no symptom, and do not even affect the regu-

¹ *Mémoires de médecine et de chirurgie pratique*, p. 271. Lyons, 1835.

² *Bulletin de la Société anatomique*, 1841, p. 235.

³ *Anatomie pathologique*, t. iii, p. 667.

larity of menstruation. Bayle¹ has mentioned a remarkable case of this innocuity. Like interstitial or submucous fibromata they are, however, often accompanied by considerable hæmorrhage. Some by their weight and displacement have been seen to produce torsion of the uterus on its axis (Fig. 363), or the spontaneous separation of the body and cervix, others have caused symptoms of intestinal strangulation by pressure on the intestine,² or even laceration of the intestine owing to a fall on the belly in the case of an osseous tumour;³ lastly, general compression and difficulty of respiration and circulation, asphyxia in fact, may be produced owing to their size.⁴ Subperitoneal fibromata are those which are most easily recognised by palpation and touch combined. There is no uncertainty except with regard to those which arise from the upper portion of the posterior wall, which must not be confounded with uterine flexions or peri-uterine tumours (the sound associated with vaginal and rectal touch enables a diagnosis to be made), or with hard pelvic or abdominal tumours, such as ovarian cysts and solid tumours (the general health is much more affected in these latter cases than in cases of subperitoneal tumours).

III. *Distinctive signs of fibromata and other uterine and peri-uterine maladies.*—Pregnancy is distinguished from them by the menses being suspended; but there are abnormal pregnancies, either in aged women, or with continuation of the catamenia or hæmorrhage, hence the error made by Bayle⁵ in a case of this kind. In order to avoid such a mistake the patient should be examined frequently at regular intervals. Balottement should be tried after the fourth month, and the physician should endeavour to determine the absence of nodulations, and observe whether there is the wine-red colour, the softening of the cervix and the œdematous sensation which the posterior wall of the gravid uterus sometimes presents; he must remember also that voluntary movements and foetal heart sounds observed in the fifth month are certain signs of pregnancy. The existence of a fibrous tumour may not prevent conception although not allowing of uterine pregnancy: there may then be a tubal pregnancy, as in the case seen by Stoltz.⁶ Extra-uterine pregnancy alone may also be taken for a fibrous tumour.⁷ Lastly, as a distinctive sign, we should notice in cases of fibroids whether expulsive pains are developed; they are frequently present, and would produce abortion if the uterus contained

¹ Op. cit., p. 79.

² It is the only mode of strangulation by fibromata that is known. Three cases are recorded: one by Nélaton, one by Duchaussoy, both mentioned by Guyon (op. cit., p. 77), and another by Holdouse: flattening of the rectum, lumbar anus, death the tenth day (*Transact. of Path. Soc. of London*, vol. iii, p. 371).

³ Arnott, *Med.-Chir. Transact.*, vol. xxiii, 1840.

⁴ Cruveilhier: two tumours in the same patient, one of 11 lbs. with a long thin pedicle, situated in the right hypochondrium; the other of 22 lbs., filling the pelvis and abdomen. Op. cit., p. 668.

⁵ Op. cit., p. 80.—Fredet, *Annales de la Société de médecine de St.-Étienne*, 1865, p. 205.

⁶ Mentioned by Aran, op. cit., p. 850.

⁷ Jobert (de Lamballe), *Gaz. des hôpit.*, July 5, 1845.

a product of conception in place of a fibroid.—We should remember that after delivery the presence of a fibroma in the uterus may expose



FIG. 363.—A, enormous sub-peritoneal pediculated fibroid, accompanied by intra-muscular myomata and complicated with pregnancy, in a woman of 42, who had a miscarriage sixteen years previously; transverse diameter, 32 in., vertical diameter 14 in. B, left kidney; C, Wolffian cyst; D, interstitial fibroid contained in the right cornu of the uterus; E, insertion of the peduncle of the large tumour on a level with the left cornu (the uterus is twisted on its axis); F, left ovary and round ligament; G, right ovary and round ligament; H, cervix (Léon Labbé, *Leçons de clinique chirurgicale*, pp. 447, 452. Paris, 1876).

us to an error in diagnosis leading us to think there is a second child. Abortion is distinguished by the coincidence of pains and hæmorrhage, the pains ceasing with the hæmorrhage. Prolapsus of the uterus inverts the vaginal walls, which does not happen when a pediculated fibroid passes through the cervix. The mistake is more easily made if the fibroid has a cavity and a transverse fissure imitating the cervix into which the finger can penetrate. In such cases the fibroid has sometimes been removed under the impression that it was the uterus. Levret, Richerand, Cloquet, Bosredon, Velpeau, Marée and

Dolbeau¹ have mentioned cases of the kind. The key to the problem is in the diagnosis of the uterus by determination of the cervix, vaginal *cul-de-sac*, the relations of the fundus, the direction of the ureter, the displacement of the bladder. Inversion of the uterus may be still more easily mistaken for a fibroid. The error has been committed by W. Hunter and Denman and followed by death;² at other times patients have survived the mistake.³ In these cases, which are rather numerous, sometimes simple inversion has been taken for a fibroid, at other times the fibroid has been rightly diagnosed but not the inversion which complicated it. In order to distinguish the one from the other two facts should be remembered: 1, in inversion, above the ring which encircles the tumour, a furrow or closed sinus exists all round, a *cul-de-sac* of moderate depth which cannot be prolonged into a uterine cavity which no longer exists; 2, the fundus no longer occupies its usual place in the pelvis; by means of vesical catheterism and rectal touch, or by means of a male catheter introduced into the bladder, the point of which is directed towards the uterine infundibulum (Malgaigne), this characteristic displacement of inversion can easily be ascertained, at least in most cases; 3, acupuncture may be utilised, as I have already said *apropos* of inversion.

Cancer may be taken for a fibroma and *vice versa*, especially when, owing to the gangrene of several fibrous tumours, an abundant fœtid discharge escapes from the uterus; but the odour of the discharge accompanying the presence and even the softening of the fibroid in the uterine cavity differs from that which characterises cancer: the former is acid, being the result of fermentation and heat; that of cancer is not only fœtid but nauseous and putrid, having the smell of decomposition. The general symptoms differ also; in cancer they are very serious, characterised by cachexia and hectic fever, the course of the disease also is relatively rapid; while in the case of fibroid they are almost limited to impoverishment of blood and to anæmia. The other uterine diseases are more easily distinguished from fibromata than the preceding. Hypertrophic elongation differs from it by its regularity of form and the cervical elongation; uterine cysts by fluctuation, softening, or the cavities which they contain;⁴ ante flexion and retroflexion (Fig. 364) by the curve which has to be described by the catheter in penetrating the uterine cavity; engorgement by an inferiority of size and weight, a less considerable displacement, a less irregular tumefaction, a previous delivery or abortion; metritis, by the equal tumefaction of the two walls, the ease with which the sound passes, the elevation of temperature, the acuteness of the pains caused by pressure, redness, muco-purulent or purulent leucorrhœa, ulceration, granulations, &c., as well as by the relative rarity of hæmor-

¹ Guyon, *op. cit.*, p. 80.

² Robert Lee, *Méd.-Chirurg. Trans.*, xx, 144.

³ *American Journal of Med. Sciences*, April, 1849.—Bloxam, *Gaz. méd. de Paris*, 1837, p. 122.

⁴ We may, like Huguier, complete the differential diagnosis between a hard fibroma and a utero-follicular polypus, with its cavity distended by a fluid, by making an exploratory puncture.

rhage. Some tumours situated outside the uterus may easily be confounded with fibromata, especially with pediculated subperitoneal fibromata, if in diagnosing them we have not recourse to the most exact means of investigation.—The first of these in frequency is retro-uterine hematocèle: the error has been made.¹ However, the history, the frequent suddenness in the formation of the tumour, the acuteness of the first symptoms, the persistence of peri-uterine adhesions, the absence of a pedicle, the site in the retro-uterine *cul-de-sac* of the sanguineous effusion which is at last absorbed, the absence of hæmorrhage and of complication of the uterine cavity, the almost invariable

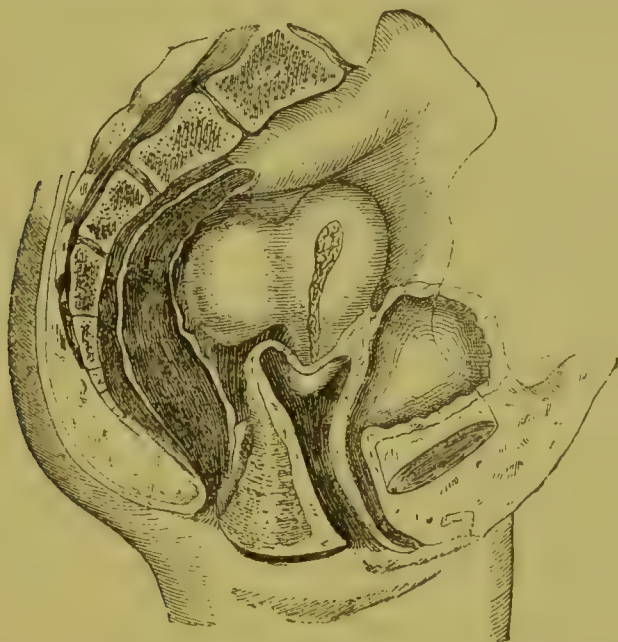


FIG. 364.—Fibroma projecting from the posterior wall of the uterus, compressing the rectum and simulating uterine retroflexion (Barnes, *Annales de Gynécologie*, t. ix, p. 441).

position of the uterus immediately behind the pubic symphyses and almost on the median line, are sufficiently distinctive signs. Recto-vaginal and vesico-vaginal² fibrous tumours are more easily distinguished. They do not deform the cervix, but they displace it, raising the vaginal *cul-de-sac*, becoming enveloped in it in place of depressing it, always having between their convexity and the corresponding portion of the uterus a *cul-de-sac* the presence or absence of which decides the question. It is less easy to distinguish hard, osseous or osteo-cartilaginous tumours,³ especially those of the anterior wall of the pelvis.

Ovarian tumours, provided they are not too voluminous, preserve an evident mobility, the existence of which is undoubted when the patient is made to change her position or when movements

¹ Voisin, *De l'hématocèle rétro-utérine*, p. 193. Paris, 1860.

² Dupuytren, *Clinique*, iii, 326.

³ Dolbeau, *Mém. sur l'enchondrôme du bassin* (*Journ. du Progrès*), 1860.—Nélaton, *Clinique*, par W. Atlee, p. 707, quoted by Guyon, *Tum. fibr.*, p. 49.

are communicated to the tumour. If, however, it is difficult to confound them with interstitial or submucous fibroids, it is not less so to distinguish them from subperitoneal fibrous tumours (especially when the latter have become free or abdominal).

It is well to remark, with regard to all extra-uterine tumours, that they push the womb up or down, according to whether they arise from the abdomen or the pelvis, in place of dragging it directly with them as uterine fibromata do. We may also remark that difficulties of differential diagnosis increase when fibromata become inflamed, suppurate or perforate the uterine wall.

Treatment.—The frequency of fibromata ought to call attention to the treatment which these tumours require. Loir, in examining the uterus in 40 old women met with fibrous bodies 15 times.—Statistics prove that they are most frequent during the period of uterine activity. Dupuytren, out of 57 patients affected with fibroma, met with 52 in those from 20 to 50 years of age; Malgaigne, out of 51 patients, found 40 from 30 to 50 years old; West, out of 76, mentions 67 between 20 and 50 years; Braun and Chiari have made analogous observations. We may, however, find them in young girls and in old women. Hardy¹ operated on a girl of 17. One was observed in a child of 9. Træzl² saw a vaginal polypus in a child of 16 months.—They are not only developed in the uterus, but also in the appendages, in consequence of the identity of nature of the muscular envelope common to these organs: this frequency is proved as regards the ovaries, Fallopian tubes, broad ligaments, utero-rectal ligaments and the vagina; I have seen them in these various organs, with their characteristic aspect, rounded, firm, hard, elastic, white and fibrous, with fibres encircling several centres.³

The *prognosis* from the reproductive point of view is unfavorable: the presence of myomata in the uterus diminishes the chances of conception, increases those of abortion and leads to great dangers at delivery; it mechanically opposes the passage of the child, it prevents the uterus from contracting after the expulsion of the placenta and exposes to hæmorrhages, it prevents retrograde evolution of the organ and becomes the source of inflammation, softening, peritonitis and septicæmia. From the point of view of danger to life in a non-pregnant woman it is much less serious: undoubtedly the presence of myomata affects the general health seriously and permanently, owing to hæmorrhage and to the development of the parasitic tumour at the expense of nutrition: but though the malady is often incurable it is seldom fatal.

The *termination* of the malady may be unfavorable or favorable. In the former case, it may threaten life in several ways: by hæmorrhage, by its rapid development which is sometimes arrested by the

¹ *Monatschr. für Geburtsh.*, Bd. xxv, S. 358.

² *Ibid.*, Bd. xxii, S. 227.

³ According to Virchow, if the usual seat of myoma is the body, *i.e.* the part of the uterus which is richest in muscular tissue, it is also frequently found in the ovary, rather less often in the uterine ligaments, less frequently still in the cervix, and most seldom of all in the vagina.

menopause, by compression of the rectum, by suppuration, by gangrene (a termination in which cure may be bought too dearly), lastly, by perforation of the uterus and organs covering it, the vesico-vaginal or vagino-rectal mucous membrane, the abdominal wall and the peritoneum in various directions.

In the latter case, there is spontaneous retrocession, diminution, or expulsion. There may be simple tolerance of even large tumours sometimes covered with calcareous incrustations: this is what happens in old women, for in them fibrous bodies seem to become pediculated less frequently than in the young. Retrocession may take place spontaneously either under the influence of iodine or after pregnancy and parturition. Theoretically pregnancy seems to promote the development as well as the absorption of fibromata; but the physician ought to take advantage of the period following delivery to prescribe resolvent treatment, as at that time there is a very energetic regressive tendency. Spontaneous expulsion is very rare; it is probable that the expulsion of polypi has often been confounded with that of true interstitial tumours; it coincides with the expulsion of the fœtus or follows it closely, or it may take place independently of gestation and delivery, by enucleation and with laceration of the uterine tissue, usually with colics as acute as those of labour; it may require surgical assistance, and is sometimes followed by profuse hæmorrhage. Therefore though fibroids are not malignant, they become serious owing to the hæmorrhage which they provoke, to their becoming jammed into the pelvic cavity and to the enormous size which they may attain. Hæmorrhage, however, may diminish under suitable treatment which brings into play the curative processes of nature (the tendency to enucleation and to the expulsion of the fibroma). It is the same with other symptoms: the tumour may soften, decrease, shrivel, become encrusted, and even disappear at the menopause. It is therefore important to treat the symptoms, moderate the development of the tumour and keep up the general health of the patient till the climacteric age is reached; the danger is much less afterwards. West thinks that patients should be reassured, as out of 96 cases he has only had one death from hæmorrhage and two from utero-peritoneal inflammation after delivery. However, that is no reason for neglecting to promote atrophy of the myoma, to assist the uterus to expel the tumour or to interfere directly when advisable.

Medical treatment is more efficacious than might be supposed: no other should be used at first in cases of sub-peritoneal tumours; as to other fibroids, it may at least be palliative and preparatory to surgical treatment. It includes many means rightly designated by Cruveilhier as *atrophic treatment*, the action of which may have a favorable result, especially when patients are near the menopause. It consists in subduing pain sometimes, hæmorrhages frequently, in promoting the spontaneous enucleation of the fibroid, avoiding all causes which stimulate uterine circulation, in bracing the constitution and promoting the natural resolution of the tumour.

Pain seldom requires treatment by opium or belladonna. Some-

times we may follow Clarke's advice to push the uterus and the fibroid it contains above the brim, so that it can be developed without hindering the functions of the pelvic organs by painful pressure. At other times the patient may be eased by the use of Bourjeaurd's abdominal belt, which prevents the concussion of sub-peritoneal or abdominal tumours, at the same time that it promotes their resolution.

Hæmostasis is obtained by abdominal applications, cold irrigations, long continued applications of ice, or better still very hot injections morning and evening for ten minutes at a time, the general and local use of perchloride of iron, alum, acids, tincture of cinamon, tannin, rhatany, and vaginal plugging. Savage, of the Samaritan Hospital in London, dilates the cervix with a sponge tent and then injects tincture of iodine (iodine thirty grains, iodide of potassium one drachm, rectified spirit two drachms, water three ounces), or pure officinal tincture of iodine into the uterus; the injection not only arrests the hæmorrhage but diminishes the size of the tumour, according to this surgeon, when repeated on each recurrence of the hæmorrhage for five or six months.¹

In order to remove all causes of disordered uterine circulation, the patient should be told to keep her bowels regular by enemata or mild laxatives; to lie on her back with the knees drawn up, especially during menstruation and metrorrhagia; lastly, complete rest should be prescribed for the diseased organ, *i.e.* patients should be dissuaded from marriage, while those who are married should be advised to discontinue intercourse, with the double object of saving the uterus from excitement tending to produce hæmorrhage and the hypernutrition of the fibroids, and of preventing the possibility of pregnancy. Ergot is the hemostatic which I prescribe most frequently with the double object of arresting hæmorrhage and of producing the spontaneous enucleation of the tumour. I usually prescribe four grains of freshly powdered ergot to be taken from one to six times a day; I sometimes substitute pills of ergotine and continue the use of it for five or six days after every monthly period for some time.² I know of few cases of fibroids which have not been improved if not cured by the use of this drug associated with other means of treatment which I shall describe.

In cases of formidable hæmorrhage (where an operation is contra-indicated), McClintock and West assert that free incisions of the cervix almost always diminish the flow of blood. Does this act by depleting the uterus, facilitating the escape of blood and thereby preventing the distension of the organ, or by producing a

¹ Sims, *op. cit.*, p. 121.

² Hildebrand of Königsberg has tried subcutaneous injections of a solution of extract of ergot (15 gr.) in water and glycerine (āā 105 gr.). Inject from 15 to 30 drops. *Berlin Klin. Wochenschr.*, June 17, 1872.—Baker Brown (*American Journal of Obstetrics*, 1877, p. 38) has seen eclampsia occur after injections of ergotine for a large fibroma, but this is the only case recorded. They are now largely used.

certain amount of indurating and cicatrising metritis?¹ It is not enough to subdue the hæmorrhage without dissipating its bad effects by tonics.

As for the spontaneous absorption of the tumour, although this result cannot be counted on, remarkable cases of it have been known (I have myself seen such); therefore we must not hesitate to prescribe resolvents. Amongst other means we may try pills of hemlock, mercury, preparations of gold, bromine, iodine, the alkalis and the *cura famis*. I prefer the following: the long-continued use of bromide or iodide of potassium, which may be increased from 15 gr. to 45 gr. a day, diuretics, milk, nitre, squills, daily friction of the abdomen and upper and inner parts of the thighs with mercurial and belladonna ointment; pessaries and suppositories, or rather enemata, of this ointment; a large abdominal compress, or painting the hypogastrium with iodine, Vichy water or an alkaline solution taken before or during meals, alkaline baths and mineral waters (Vichy, Andabre, Vals, Boulou, Plombières), associated with hydropathy. The medical treatment which I prescribe for fibro-myomata is the following: a diet of meat and fish, fresh vegetables, ripe fruit, stale bread, wine diluted with Bussang or Orezza water; alteratives in the various forms just mentioned); I also specially recommend my patients: 1, to make vaginal injections on the bidet for ten minutes with water as hot as can be borne, and to which has been added one or two dessert-spoonfuls of a solution of carbolic acid (from $\frac{1}{2}$ to 1 oz. of crystallised carbolic acid to a quart of water); 2, three times a week a subcutaneous injection of 15 drops of a solution of ergotine (15 gr. of ergotine dissolved in 105 minims of water and 105 minims of glycerine); 3, three times a week the application for ten minutes of a rather strong continuous current, rendered intermittent by means of a metronome, the positive pole being applied to the cervix and the negative pole to the abdomen. Although we cannot hope to cure all fibromata we may by these means keep them in check.

Surgical treatment is very effectual. In the numerous cases in which it can be applied it is curative. It varies according to whether the fibrous body is interstitial or detached from the uterine wall and only connected with the peritoneum or mucous membrane by a more or less broad pedicle. In this latter case if the *fibroma* is *subperitoneal* or *abdominal*, and if operation is not contra-indicated, it may be removed by abdominal section performed in the same manner as for extirpation of an ovarian cyst,² an operation which will be described when we come to ovariectomy. If the *pediculated fibroma* is *submucous*, and especially if it has escaped from the cervix, surgical intervention is indispensable: it consists in the extirpation or destruction of the tumour by one of the numerous methods applicable to the treatment of polypi.

¹ Amilear Ricordi, *Traitement des fibrômes par la méthode des incisions multiples* (Comment. di. medic. et chirurg. Milan, 1st year, No. 1).

² W. Atlee, two cases: *American Journ. of Med. Science*, April, 1845, April, 1855.

In the former case, *i. e.* of *interstitial fibroma*, surgical intervention is debateable; it is surrounded with difficulties and often with danger. Its aim is to extirpate the tumour, but this can only be effected by enucleation.

The methods differ as does the facility of operation according to the depth at which the fibroid is seated (in the cervix or in the body), the projection which it makes under the mucous membrane, the thickness of the layer of uterine tissue covering it, the adhesions which it has contracted in the kind of cyst in which it is contained, and lastly, the size it has attained. With regard to depth, if the *fibroma is contained in the thickness of one of the two cervical lips* it is easy, after having slightly drawn down this organ, or having separated the vaginal walls by means of dilators, to incise the mucous membrane and uterine tissue in the median line, to reach the tumour, to rupture with the finger or handle of the scalpel the connections which loosely unite it to the neighbouring parts, to seize it when necessary at the sides with tenaculum hook forceps or in the centre with a corkscrew driven into the tissue itself, and to enucleate it completely. In such cases, unless the tumour has acquired an enormous size, there is no contra-indication to operation. If the *fibroma is contained in the cavity of the body* the orifice must be previously dilated. Ergot often produces the double effect of pediculating the tumour and forcing it powerfully and continuously towards the orifice, by the contractions which it excites in the uterine tissue; gradual dilatation of the cervix is produced by pressure of the tumour, a dilatation similar to that determined by pressure of the bag of waters during labour.

When the dilatation of the cervix produced by the expulsive efforts is insufficient, it should be facilitated by the introduction of instruments into the uterine cavity to dilate or divide it. I prefer prepared sponge to more violent means because its slow but continuous action produces in the end complete dilatation almost without causing any pain. Dilatation is facilitated and the pain of it diminished by covering the dilator with a little extract of belladonna. In 1814 Bonnie,¹ having diagnosed a polypus in a woman subject to repeated hæmorrhages, by forcing his finger into the os, dilated this orifice with sponge tents till he was able to introduce several fingers into the uterus, and having discovered the insertion of the pedicle applied a ligature. Dupuytren² considers simple or multiple division of the cervix better than dilatation. This eminent surgeon divided it in one stroke from without inwards, whereby he avoided injuring everything except the tumour, whilst Velpeau performed the same operation in several little incisions from within outwards. The incisions should be made obliquely when possible, and should be multiple rather than single. Whilst recognising the utility of this method when there is danger of fatal hæmorrhage and urgent necessity for the removal of the fibrous body, I think it is usually unnecessary, and that gentle mechanical dilatation associated with the use of ergot is sufficient in

¹ *Bulletin de la Faculté*, t. iv.

² *Clinique chir.*, iii, 360.

submucous fibroids, as in polypi, to allow of the introduction of the fingers and instruments into the uterus. When the cervix is sufficiently dilated to admit of operation the uterus is drawn down if necessary, the index finger of the left hand is then introduced into the uterine cavity, the form of the tumour diagnosed, and the uterine tissue covering the central and most prominent portion incised from above downwards with a probe-pointed bistoury; then with the fingers or the handle of the scalpel the fibroid is separated from its envelope and extracted. Amussat used to detach the tumour by beginning at the upper part and working downwards. The remaining fragments of mucous membrane or uterine tissue contract, cicatrise, or are partially destroyed by suppuration.

This operation is not very difficult, and I think unattended with much danger when the tumour is not very large, when it is free from adhesions, when it projects towards the uterine cavity and when from the long-continued use of ergot it has a tendency to become pediculated. I have performed it several times successfully. Hæmorrhage resulting from division of the vessels of the uterine wall need not be feared any more than spontaneous hæmorrhage. It is true that the uterine wall has been dragged away, that it has been divided and the peritoneal cavity penetrated¹ in this operation, but if under the influence of the long-continued use of ergot the tumour has become sufficiently prominent to authorise the surgeon to decide on extraction, it is to be presumed that the subperitoneal portion of the uterine wall in the interstices of which the fibroma is contained, is thicker than the submucous portion, and consequently protected from the danger of these accidents. The important point is not to operate in a hurry or before enucleation has been facilitated. The adhesions which Bérard² found between the fibroma and the cavity containing it are almost the only obstacles that cannot be foreseen, and which it is difficult to remove.

But the chief difficulty is the size of the tumour. To this cause must be attributed the great mortality attending such operations.³ Amussat⁴ first performed ablation of these large fibroids; since then different methods have been adopted, varying with the site of the fibroids according as they are seated in the walls or fundus.—In cases of *fibroids of the walls* the tumour may be divided by two incisions, separated below but touching above, and enclosing a triangular segment or the third of the fibroma, the ablation of which will greatly facilitate the extraction of the two remaining thirds. Or, like Maissonneuve,⁴ after dividing the tumour longitudinally into halves and enucleating all the lower portion of one of these halves we may divide the latter from below upwards in a direction parallel to its surface and

¹ Le Piez, *Journal de chir. de Malgaigne*, 1845, p. 90.

² *Bulletin de la Société anatomique*, 1849, p. 82.

³ Hutchinson (*Med. Times and Gazette*, August, 1857) has collected 39 cases of similar operations; out of 18 enucleations with the hot iron there were 12 cures, 6 deaths; out of 15 enucleations with caustics 9 cures, 6 deaths; out of 6 unfinished operations 4 cures, 2 deaths.—Guyon (op. cit., p. 114) counts not less than 10 deaths out of 17 operations.

⁴ *Bulletin de la Société de chir.*, 1849.

thus, by the extraction of a superficial slice, facilitate the enucleation of the deep portion; the other half is easily extracted afterwards.—



FIG. 365.—Sub-mucous fibroma, projecting into the vagina through the dilated cervix. Attempted extraction by the vagina lasting two and a half hours. Death from hæmorrhage and exhaustion nine and a half hours afterwards. (Emmet, op. cit., p. 582, fig. 100). I have seen a similar case, except that the patient died of septicæmia.

With regard to *interstitial fibromata of the fundus*, it is difficult to reach them if they cannot be drawn through the cervix; but even when this is the case two difficulties present themselves; the thinness of the uterine wall which separates them from the peritoneum, and the difficulty of distinguishing the exact limit of the fibroid on the fundus of the womb, which is necessarily inverted by the descent of the tumour.

When obliged to perform such operations we should adopt Jarjay's method. Instead of cutting the tumour transversely it should be divided longitudinally by a vertical section with great care, so that each hemisphere may be separated right and left and the upper boundary between the tumour and the uterine tissue easily defined. After operation the inversion is reduced.

Whatever method be adopted we must endeavour to effect extraction. Such an operation is fatal if left unfinished. The denuded or divided fibrous body becomes softened and tumefied, causing ineffectual expulsive efforts and infectious suppuration which always terminates fatally.

To sum up, it is very difficult to estimate the dangers of the operation beforehand. Apart from hæmorrhage, death is too often caused by peritonitis, phlebitis, pyæmia, resulting from traumatism of the uterus in

women exhausted by loss of blood. Therefore we should not undertake the extirpation of fibromata of any considerable size unless it is decidedly indicated, the life of the patient being in continual danger from hæmorrhage.¹ It should never be undertaken, moreover, until resolvent treatment has first been tried; the continuous current, subcutaneous injections of ergotine, very hot vaginal injections, perchloride of iron and bromide or iodide of potassium being the means most likely to succeed. When, however, operation is successful it may effect a radical cure and be followed by conception, normal pregnancy and delivery.² When the fibromata are voluminous, multiple and do not project towards the uterine cavity, extirpation of the whole uterus with its appendages has been attempted by abdominal section, as in ovariectomy. Clay³ ties the vessels of the broad ligaments and then secures the cervix by a ligature of circular thread. Kœberlé,⁴ by a single puncture from before backwards, passes two metallic ligatures through the uterine mass, and tying one on each side removes each half of the organ with the corresponding broad ligament successively by constriction. This method has been adopted by the majority of surgeons. I shall revert to this operation when describing that of ovariectomy, merely mentioning now in passing that this daring surgical operation has been successfully performed; as, however, the mortality has hitherto been considerable,⁵ it is best to reserve our opinion upon the future of an undertaking which but a short time ago would have been condemned as unwarrantably rash.

During pregnancy the indications presented by fibromata vary according to the symptoms produced; it may be necessary to subdue uterine contractions, to induce abortion or to remove a tumour of the cervix when it causes serious hæmorrhage.⁶ During labour⁷ an interstitial fibrous tumour may force the surgeon to have recourse to forceps, version, embryotomy, Cæsarean section, puncture⁸ or ablation⁹

¹ Jarjavay, *Des opérations applicables aux corps fibreux de l'utérus*. Thèse de concours. Paris, 1852.

² Grimsdale, *A Case of Artificial Enucleation of a Large Fibroid Tumour of the Uterus, with some Remarks on the Surgical Treatment of these Tumours*; in *Liverpool Medico-Chirurg. Journal*, Jan., 1857.

³ *Observations on Ovariectomy, Statistical and Practical. Also a Successful Case of Entire Removal of the Uterus* (Transact. of the Obstet. Soc. of London, vol. v, 1864).

⁴ *Documents pour servir à l'histoire de l'extirpation des tumeurs fibreuses de la matrice, par la méthode sus-pubienne* (Gaz. méd. de Strasbourg, 1864).—*Opérations d'ovariotomie*, pp. 79, 98, 105. Paris, 1865.

⁵ Routh, *On some Points connected with the Pathology, Differential Diagnosis and Treatment of Fibrous Tumours of the Uterus* (The Lancet, 1863, 1864).—Kœberlé, *Opérations d'ovariotomie*, p. 98. Paris, 1865. He lost three patients out of six.—Caternault, *Essai sur la gastrotomie dans les cas de tumeurs fibreuses péri-utérines*. Paris, 1866. List of 76 cases. Nearly two-thirds of the patients died from hæmorrhage.

⁶ *Merrimann*, polypus ligatured during pregnancy. Cure. Delivery one month afterwards. See also the remarkable work already mentioned of R. Lefour.

⁷ Puchelt, *De tumoribus in pelvid. partum impredientibus*. Heidelberg, 1840.

⁸ Cazeaux, *Bulletin de la Soc. de chir.*, 94.

⁹ Danyau, *Bulletin de l'Acad. de méd.*, 1851.—*Revue médico.-chirurg.*, 1851.

of the tumour itself. We should, however, know when to wait; for we know by experience that delivery may exceptionally take place spontaneously and almost without accidents. To sum up the indications to be followed in such cases they may be arranged in the following order: 1, expectation; 2, attempted reduction or retropulsion of the tumour above the brim (Stoltz places this foremost); 3, ordinary forceps with or without continuous traction (preferred by Depaul and Guéniot to version); 4, version (preferred by West and Tarnier to forceps), it may help in the reduction of the tumour;¹ 5, embryotomy; 6, enucleation of the tumour (unfortunately the boundaries and connections of it are very uncertain and hæmorrhage is to be feared); 7, Cæsarean section;² 8, induction of premature labour (a doubtful point, for the tumour may rise, even in the third month, as Blot's case shows); 9, induced abortion (to be reserved for cases in which the life of the mother is in serious danger). After delivery, if accidents occur which do not allow of our waiting till the fibroid, which hypertrophied during gestation, resumes its original size or atrophies, examples of which have been given by Chailly³ and Cazeaux,⁴ the tumour may be extracted immediately, as in the cases recorded by Guyot,⁵ Danyau,⁶ Langenbeck⁷ and Keating,⁸ or only after the uterus had resumed its usual size, as Ramsbotham⁹ advised, in order to take advantage of the regressive tendency which the uterine tissue possesses at that time to institute energetic resolvent treatment, which, while it might cause the disappearance of the tumour, would at the same time exercise a favorable action on the involution of the uterus.

POLYPI AND MOLES

Polypi and moles are excrescences of various kinds having their origin in one or other of the uterine tissues or in certain elements of a fertilised ovum. The hypertrophy of these tissues, or rather the property which the uterine tissues and the embryonic envelopes possess of becoming hypertrophied, is the immediate cause of the development of both structures. *Polypi* are kinds of hypertrophic vegetations of a portion or of one of the elements of the uterine tissue proper, of its mucous membrane or of its vascular system. *Moles* are organised bodies arising from the envelopes of a product of conception, implanted

¹ Too few cases have been recorded to allow of our deciding between these two methods (forceps or version).

² Etlinger, *Observationes obstetriciæ*. Bonnæ, 1854.

³ *Traité de l'art des accouchements*, p. 572. Paris, 1861.

⁴ *Ibid.*, p. 620. Paris, 1862.

⁵ Levret, *op. cit.*, p. 220.

⁶ *Recherches sur les polypes fibreux de l'utérus* (*Journ. de chir. de Malgaigne*, 1846).

⁷ *Schmidt's Jahrbuch*, August, 1851. Operation followed by death.

⁸ *American Journal of Med. Sciences*, May, 1858. Operation followed by death.

⁹ *Obstetric. Med. and Surg.*, p. 224. London, 1856. A woman of 30 years, delivered three weeks previously. Cure.

in the uterine tissue, deriving from it a morbid hypertrophic growth and presenting themselves under the two very different forms of grape-like clusters and fleshy bodies.

1. *Uterine Polypi*

Polypi¹ are tumours which differ from all others by the existence, if not of several feet as the etymology seems to indicate, at least of one foot or pedicle or contracted portion, by which they are attached to the uterus. Whether this pedicle is broad or narrow, short or long, whether the tumour is contained in the womb or expelled by muscular contractions, the polypus is always characterised by the existence of a pedicle. These tumours are classed together because the presence of a pedicle suffices to produce a group of special symptoms and special indications common to all tumours of this kind. They are all due to the hypergenesis and hypertrophy of one or more of the elements which enter into the composition of the uterine substance. There are therefore only three principal kinds of uterine polypi: the fibrous or muscular, much the most common; the mucous less common; the vascular the rarest of all. Hypergenesis may affect several of the uterine elements simultaneously so as to produce composite polypi, in which these various elements enter in various proportions; lastly, the polypi themselves are subject to various alterations which more or less modify their structure.

1. *Fibrous* polypi are nothing but interstitial fibromata or myomata which have become submucous and pediculated. They are sometimes enormous, sometimes multiple, at other times degenerated, fibrocystic, softened in their centre, or, on the contrary, indurated, cartilaginous, encrusted on their surface and stony throughout.

2. *Mucous* polypi are formed by the hypergenesis of the elements of the mucous membrane and especially of the follicles of this membrane. Sometimes they are very small, very transparent, more sub-epidermic than mucous, meriting the name of vesicular or epithelial.² At other times they are produced by the accumulation of mucus in a cervical gland the orifice of which is obliterated, in one of Naboth's eggs which acquires a size varying from that of a pea to that of a large nut, and which, instead of remaining sessile or buried in the uterine tissue, is gradually detached from it, becoming pediculated; at other times they are formed by the development of analogous phenomena in several follicles of the body or cervix in such proportions that they may form considerable tumours, cysts, cystic or hollow polypi, to which the name of follicular or utero-follicular³ has rightly been given, producing sometimes simultaneously the hypertrophy of the

¹ The name *polypus*, applied to certain tumours of the uterus, seems to date as far back as Moschion; but it is only since the time of Ruysch (*Observ. Anat.*, 6) that this word, which till then was confined to polypi of the nose, has been generally employed to designate the analogous excrescences of the uterus.

² Montfumat, *Études sur les polypes de l'utérus*, 1867.

³ Huguier, *Des kystes de la matrice et du vagin. Mém. de la Soc. de chirurg.*, t. i.—Luna, *Des kystes folliculaires de la matrice et des polypes utéro-folliculaires*. Thèses de Paris, 1852.

fibro-plastic, fibrous and vascular elements of the uterine mucous membrane. These utero-follicular polypi may be vascular containing cavities in which sanguineous effusions are produced, and occasionally becoming in themselves the source of hæmorrhages, unlike the majority of fibrous polypi which excite uterine hæmorrhage without themselves being the source of it.



FIG. 366.—Vesicular polypus of the cervix projecting beyond the *os externum*, seen through the speculum (from a drawing by Meyer).

3. *Vascular* polypi are rare, their existence being denied by some writers, whilst by others they have been confounded with sanguineous or fibrinous polypi (*hæmatomata* of Virchow), which are only fleshy moles or uterine clots; by Levret they were recognised under the name of fungous polypi. They are usually small, harder and smaller when developed in the cervix, softer, more spongy, more bleeding when developed in the uterine cavity. On section

more blood is discharged than one would suppose. I have seen seven of the size of a cherry on the cervix; two of them, of a dark red colour, seemed to be painfully swollen at certain periods, especially during menstruation, like hæmorrhoidal tumours. Perhaps they should be included in the class of mucous polypi rather than in that of fibrous polypi, the vascular hypertrophy which causes them only being produced at the expense of the vessels of the mucous membrane and not of the tissue proper of the uterus.

Diagnosis—subjective signs.—Usually at the commencement of the malady the general and local symptoms are very vague; the polypus causes expulsive pains, to which later on are added radiating pains, dull achings and neighbouring disorders.—These are accompanied by menstrual disorders, at first by menorrhagia, afterwards by metrorrhagia, due in the majority of cases to the fluxionary movements which the presence of the polypus excites in the womb. Hæmorrhage is the greatest danger, caused by the presence of polypi in the uterus; it may carry the patient off without medical intervention.¹ I give the woodcut of a fibro-mucous polypus, which, notwithstanding its small size, caused such serious hæmorrhage that if the patient had not succumbed to an intercurrent malady ablation would have been required to save her life.—Mucous, purulent or sanguinolent leucorrhœa is produced in the interval between the hæmorrhages or simultaneously with them, owing to the irritation just described in the internal membrane of the uterus. Vomiting, dyspepsia, impoverishment of blood, are the usual consequences of the reaction produced upon the uterus and nervous system by the presence of a polypus. Conception is not impossible but abortion is very common.

¹ Saxinger (*Monatschr. für Geburtsk.*, 1868, Bd. xxxii, S. 329) relates a case in which death was caused by spontaneous and repeated hæmorrhage from a mucous polypus, the removal of which was not attempted.

Objective signs.—Direct examination is more or less easy and the results more or less satisfactory according to whether the polypus is



FIG. 367.—Fibrinous uterine polypus of Velpeau and Kiwisch, or free polypous hematoma of Virchow. A large portion of the foetal placenta is still adherent to the projecting placental insertion (*Die Krankhaft. Geschwülste*). still hidden in the uterine cavity, plugging the orifice, floating in the

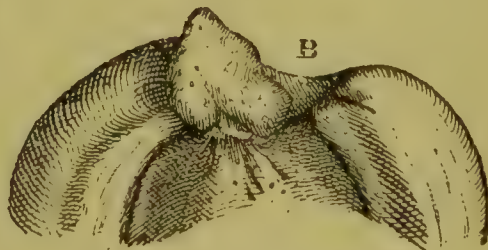
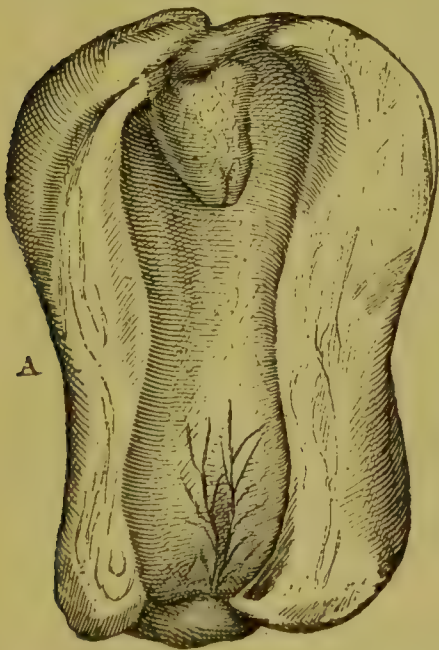


FIG. 368.—Fibro-mucous polypus, remarkable for the abundance of the metrorrhagia produced in spite of its small size. A, tumour *in situ*; B, tumour raised so as to show its posterior surface.

vagina or invading the pelvic cavity. The tumour does not become

pediculated in passing through the cervix: the pedicle is acquired whilst the tumour is still within the uterine cavity. When the tumour is still retained in the uterine cavity the cervix must be dilated; the finger is then introduced into the uterus, and with the help of the



FIG. 369.—Pediculated cervical polypus (from Boivin and Dugès).

sound we try to reach the highest part of the tumour in order to discover the pedicle. The tumour may even be seized with the forceps, when by a movement of rotation or torsion we find out whether it is sessile or pediculated. Frequently we can discover nothing unless the investigation is made during menstruation. The polypus often re-enters the uterine cavity after having been seen at the orifice. This alternate appearance and disappearance may occur several times.¹ When the tumours have descended into the cervix or into the vagina it is of capital importance to discover the cervix or os. After having ascertained the size and consistency of the intra-vaginal tumour the examining finger should discover the state of the cervix externally and internally, exploring the external surface; the utero-vaginal *culs-de-sac*, the circumference of the orifice and the cervical cavity, and endeavouring to penetrate into the cavity of the body to discover the insertion of the pedicle.

Differential diagnosis.—It is much easier to distinguish polypi than fibromata from other tumours producing deformity of the uterus. Pregnancy, cystocele, vaginal hernia, prolapsus, cervical hypertrophy, cannot be confounded with them.

There are only two diseases the differential diagnosis of which is somewhat difficult: inversion and cancerous cauliflower excrescences.—With regard to inversion we must remember that the body of the uterus is no longer found in its normal position in the pelvic cavity, nor can the uterine cavity be traced beyond the circular *cul-de-sac* which forms the limit between the neck and the body of the womb.—As to cancer, even the cauliflower variety differs so greatly from polypus in the aspect and consistency of its tissue, the breadth of its insertion over the whole surface of the cervix or of one of its lips, the inequality of its surface, &c, that it is difficult to make a mistake as to its nature.

¹ Larcher, *Contributions à l'histoire des polypes fibreux intra-utérins à apparitions intermittentes* (Archiv. génér. de méd. Paris, 1867).—Robert Johns (Gaz. méd., 1858, p. 123).

Treatment.—There are two principal indications: 1, to provoke the expulsion of the polypus or, by dilatation of the os, to facilitate the introduction of instruments for ablation; 2, to remove the polypus by operation.

I. The first indication is fulfilled by all the medical and surgical means which I have described as employed in the treatment of interstitial fibromata and submucous fibroids. The rules of their application are the same as in cases of submucous fibromata, induced abortion and extraction of any foreign body from the uterine cavity. Sometimes expulsion and even complete detachment is effected spontaneously (out of 13 cases of spontaneous cure it has been observed 10 times, in the 3 other cases the polypus was destroyed by suppuration), but the uterine contractions are sometimes so violent and continuous that they may produce attenuation, mortification, and perforation or rupture of the uterus.¹

II. The *second indication* is fulfilled by direct surgical intervention which, to the honour of the art be it said, is usually successful. The treatment of polypi constitutes, as Velpeau has justly remarked, one of the triumphs of surgery. The methods used for the destruction of polypi of the other organs have been successfully applied to the ablation of uterine polypi. They are: cauterisation, crushing, torsion, ulcerative ligature, extemporaneous ligature or *écrasement* and excision. These methods should neither be adopted nor rejected without consideration. There are some which are preferable to others, and applicable to the majority of cases, such as ligature, *écrasement* and excision; these may be regarded as the best methods. Cauterisation and crushing are extreme measures applicable to the body and not to the pedicle of the polypus; torsion is not without danger, but this exceptional method has its indication and ought to be adopted in cases of polypi of a special nature or in certain conditions. The general methods themselves ought not to be applied indifferently to all polypi; one or other is preferable according to the point of insertion of the polypus, the size, consistency, structure and vascularity of the tumour. Before describing these various methods and their indications or contra-indications I may remark that cauterisation is only applicable to vascular or fungous tumours, or to those contained in the uterine cavity and which cannot be seized by any instrument; crushing is applicable in similar cases, especially to intra-uterine or very hard tumours, the pedicle of which can neither be reached nor divided nor yet ligatured, and upon which caustics would have but little effect. Torsion is applicable to the ablation of small mucous follicular or very vascular polypi, the pedicle of which may be ligatured beyond the point on which torsion is brought to bear, but is dangerous in cases of large and hard pediculated fibromata, the tissue of which is continuous with the uterine fibres, for laceration may occur beyond the pedicle, affecting the uterine wall itself; ligature is preferable in cases

¹ Larcher, *De la rupture spontanée de l'utérus et de quelques autres particularités dans leurs rapports avec les polypes fibreux intra-utérins* (Archiv. gén. de méd., 1869).

of large, very vascular, utero-follicular, cystic, or even fibrous polypi when there is a probability of the existence of large vessels in the pedicle, or when it is applicable as a precautionary measure to be followed immediately by excision; extemporaneous ligature and écrasement are applicable under the same circumstances when the absence of hæmorrhage and tolerance on the part of the patient allow of constriction of the pedicle being carried to the point of section or laceration in place of waiting for ulceration, thus sparing the patient and surgeon the drawbacks of sloughing of the tumour; lastly, excision is preferable in all cases of pediculated fibromata, for experience proves that there are no large vessels in the pedicle, and that it is even applicable to other polypi provided hæmorrhage can be arrested by ice, very hot injections, cauterisation, perchloride of iron and plugging.

1. *Cauterisation*.—This is only employed for very small tumours of the cervix, or for larger polypi contained in the body, and which cannot be reached by instruments. It may be applied in the form of nitrate of silver, acids, caustic potash, the actual cautery for cervical polypi and even for a polypus of the body; but it is dangerous in the latter case, and should only be applied very exceptionally. The galvano-cautery may also be used after Middeldorpf's¹ method or Paquelin's thermo-cautery.

2. *Crushing*.—This may be performed with my uterine forceps, either straight or curved. Simpson used very powerful small forceps; Thierry a pair of very strong curved toothed forceps; Nélaton a punch-forceps; Richet crushing forceps. It is, however, to be feared that the tissue of the polypus, being only partially crushed and not immediately extracted, may become tumefied, may mortify at some points and give rise to strangulation and putrefaction.

3. *Evulsion* is performed with polypus forceps with concave blades which are rough, perforated or grooved, so as to fit tightly together. It is applicable to the ablation of mucous polypi, small cystic, follicular polypi and small vascular polypi of the cervix. The pedicle should always be compressed with elbow forceps above the point at which traction is made.

4. *Torsion*, though dangerous for fibrous polypi with a broad pedicle merging into the uterine tissue, is useful in the ablation of small mucous and vascular polypi on account of its rapidity and completeness. I have frequently removed such tumours in a few seconds; and for this purpose have had forceps made with elbow blades deeply grooved fitting perfectly into each other, by means of which the pedicle of the fungous or varicose tumour is easily seized, whilst torsion is performed lower down with other forceps, till the tumour is detached from the uterus.² My uterine forceps are usually sufficient for this operation. The actual cautery should be applied to the point of insertion in order to prevent reproduction of the polypus.

¹ Ressel, *De polyporum uteri extirpatione methodo galvano-caustica instituta*. Diss. inaug. Vratisl., 1857, with plates.

² Puech mentions two cases, proving that torsion is applicable even to large polypi when applied with proper precautions (*Annales Cliniques de Montpellier*, 1857, p. 218).

5. *Ligature*.—This was recommended by Paré and Guillemeau, adopted by Levret¹ and Desault,² and further improved by Niessen,³ Mayor,⁴ and others. The nature of the ligature, the manner of applying it round the pedicle and the method of constriction are variable,

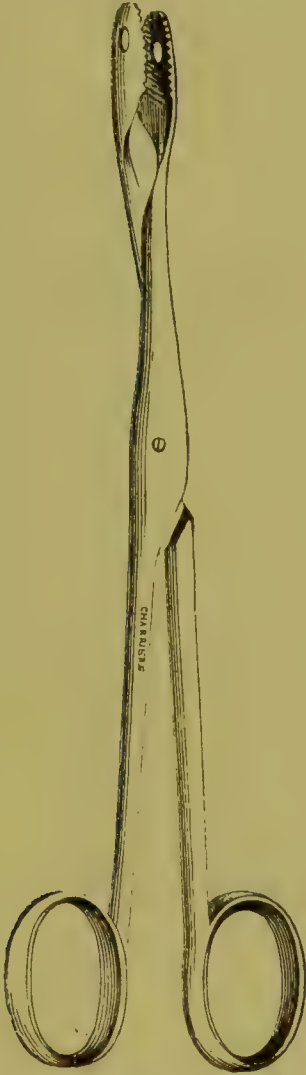


FIG. 370.—Ordinary polypus forceps with crossed blades.

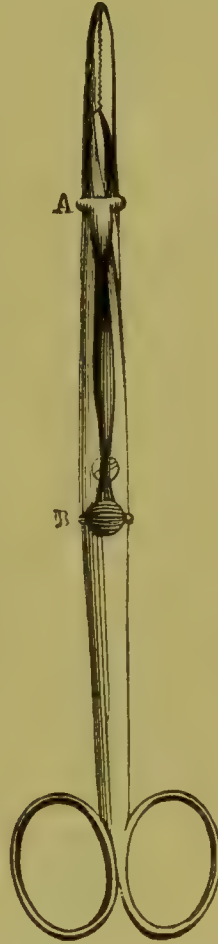


FIG. 371.—Polypus forceps with sliding fastener.

having been improved and modified so as to be applicable to all cases, and to allow of the ligature being introduced into the interior of the uterus provided the cervix is sufficiently dilated. Levret's ligature was silver wire, a means of constriction at once flexible and resistant,

¹ *Mémoire sur les polypes de la matrice et du vagin. Acad. de chirurg.*, 1749.—*Observations sur la cure radicale des polypes de la matrice.* Paris, 1759.

² *Journal de chirurgie*, t. iv.—*Œuvres chirurg.*

³ *Dissertatio de polypis uteri et vaginæ, novoque ad eorum ligaturam instrumento.* Göttingen, 1785.

⁴ *Nouveau système de déligation chirurgicale.* Lausanne, 1837.

and which can be managed by the fingers alone. Iron wire may be substituted, but it has the drawback of oxidising, and of breaking before the tumour falls; ordinary strong waxed thread or whipcord is better; silk may also be used and when well waxed is the most flexible and resistant of all. I prefer an elastic ligature, however, to all of these. Instead of the ligature we may employ the method adopted by Gensoul¹ of seizing the pedicle with polypus forceps furnished with curved blades for continuous constriction. Aveling invented his polyprite to serve instead of forceps.

The mode of applying the ligature round the pedicle is equally variable. — Levret used two cannulæ soldered together laterally, through which the silver thread was passed so as to form a loop between the two extremities at one end; this loop was applied by the instrument and arranged round the pedicle by the fingers; the ligature is arranged in the same way when de Graefe's serre-nœud is used or any analogous instrument of larger size to grasp the pedicle and increase the constriction day by day. Desault used two separate cannulæ; one end of the ligature was passed into one of the cannulæ, the other end was held by the double half ring at the end of a stylet passed into the second cannula which could be closed or opened at will; the extremities of the two cannulæ united by the loop being applied to the pedicle of the polypus, one was held fixed whilst the other was passed round the pedicle till meeting again with the former, it had completely surrounded the pedicle by the ligature. By rotating the two cannulæ the ligature was twisted and detached from the tubes, when the two ends were passed through a serre-nœud; Niessen used two long separate silver cannulæ with which the ligature could be passed round the pedicle of the polypus, after which they were held together side by side so as to allow the two ends of the ligature to be tightened. Two gutta-percha catheters² may be substituted for Niessen's double cannula, or two needles³ a quarter of a yard long may be used, the eyes serving to carry the constricting ligature to the necessary depth. Lastly, we may like Mayor employ two or three stems of steel or whalebone terminating in a claw.

The methods of constriction are as various. Levret, after having tightened the loop as much as possible, tied the two ends of the ligature to the rings at the outer end of his double cannula, which he then rotated so as to twist the ligature on a level with the pedicle. Desault, after having detached the two ends of the ligature united them in one cord which he passed through the opening of a very simple serre-nœud (a steel stem, one extremity of which is bent at right angles and pierced with a circular hole, the other being also bent at right angles like the first in order to hold the terminal extremity of the ligature passed into the upper ring); Sotto's serre-nœud has been substituted for this. Niessen united his tubes by passing them into a short double nozzle similar to a portion of Levret's double cannula,

¹ *Revue médico-chirurg.*, 1851, p. 89.

² Favrot, *Revue méd.-chirurg.*, Jan., 1848.

³ Hulin, *Mémoires de méd. et de chir. pratiques*. Paris, 1862.

Gooch introduced the two tubes simultaneously into two double metallic rings united by a single stem. Bowman adapted a rack to the extremity of this little apparatus; De Graefe's screw serre-nœud

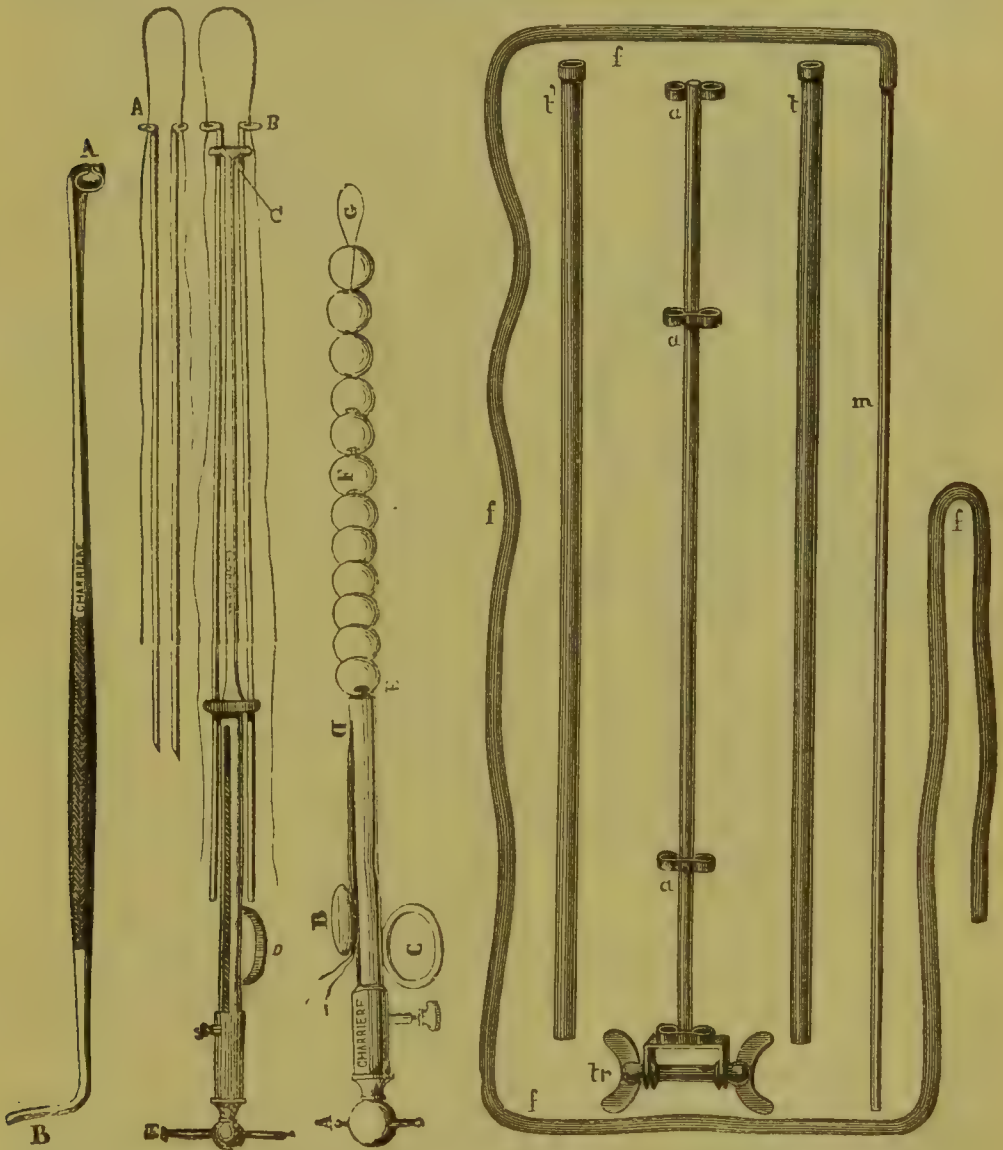


FIG. 372. FIG. 373. FIG. 374.

FIG. 375.

FIG. 372.—Sotto's serre-nœud.

FIG. 373.—Porte-ligature. A, holder; c, united in a serre-nœud with screw D, invented to apply the ligature round the pedicle and to effect constriction; this instrument may be substituted for those of Levret, Niessen, Gooch, Bowman and Graefe.

FIG. 374.—Graefe's serre-nœud with perforated ivory balls.

FIG. 375.—Gooch's apparatus modified by Courty for the application of the elastic ligature. *ff*, india-rubber tube; *m*, metallic guide, by means of which the india-rubber ligature is passed through the metallic tubes *tt*; *a a a*, rings and iron stem, into which the tubes are adjusted; *tr*, rack, of no use when the elastic ligature is applied: the two ends of the india-rubber tube are fastened to it.

and the other instruments of the same kind by which, when the ends

of the ligatures are once fixed, constriction may be slowly and progressively increased are usually preferable. I generally employ the *elastic ligature*, the loop of which is applied round the pedicle by Emmet's porte-ligature or porte-chain, the ends being passed by means of my metallic guide through two Gooch's tubes brought close

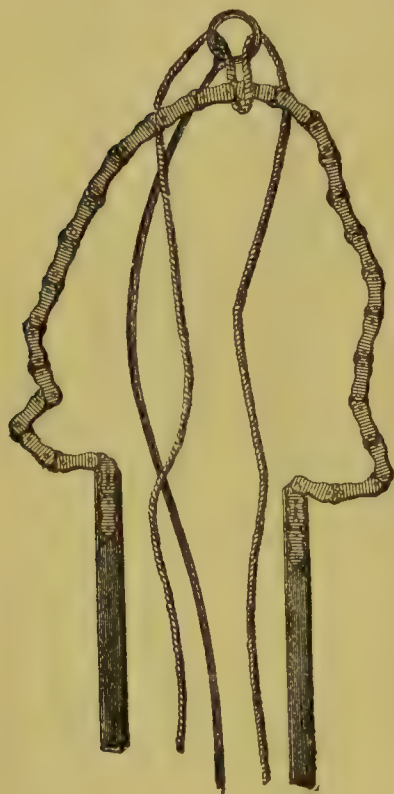


FIG. 376.—Emmet's porte-chain round the pedicle of the tumour.

together and held by double metallic rings. The elasticity of the elastic tube or ligature when once fastened to the rack at the end of this apparatus is sufficient to keep up the constriction and produce ulceration of the pedicle.

The ligature may cause immediate or subsequent accidents. The most serious primary accident is constriction of the uterine wall resulting from the application of the ligature above the insertion of the polypus; but this is easily avoided with a little care if we remember that it is useless to apply constriction at the point of insertion of the pedicle, and that it is even better to run the risk of leaving a portion of the tumour; this portion usually mortifies and falls of itself like the end of the umbilical cord included between the ligature and umbilicus.

—The drawbacks resulting from mortification of the tumour, fœtid discharges, purulent absorption, &c., have been very much exaggerated and may be generally avoided by frequent detersive lotions, by more rapid constriction of the ligature or by complete

and instantaneous division of the pedicle below the ligature.

6. *Linear écrasement*.—This is preferable when the polypus is very vascular. I have performed it frequently and always successfully.—Lerpinière,¹ L. Boyer and Pajot suggested dividing the pedicle of the polypus by *sawing* it through by alternate movements in opposite directions communicated to the extremities of a metallic loop or thread of whipcord passed round the pedicle.—Chassaignac's instrument is undoubtedly preferable to the latter method; a straight or curved instrument is used according to the case. I think it is usually easier to pass a silk cord or metallic wire round the pedicle² than the chain of

¹ *Journal des connaissances méd.-chir.*, 1834.

² To obviate this difficulty Sims has invented a *porte-chain* (op. cit., pp. 79, 80, 81, figs. 28, 29, 30), and Emmet has devised a still simpler way of adjusting the chain by means of a loop of thread carried to the end of the vagina by the terminal ring of a long stylet (see fig. 376).

the *écraseur*, and as the extremities of this ligature may be attached to a good *serre-nœud* and the constriction increased as rapidly as is desirable, so as to divide the pedicle in the same way as with the

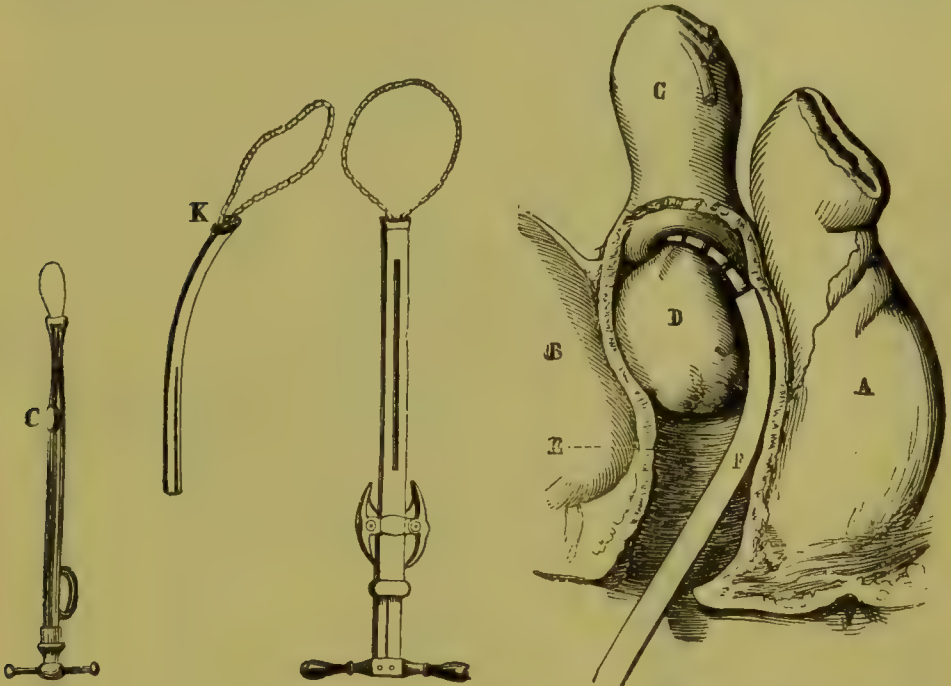


FIG. 377.

FIG. 378.

FIG. 379.

FIG. 377.—*Serre-nœud* for effecting section of the pedicle by extemporaneous ligature.

FIG. 378.—Chassaignac's straight and curved linear *écraseurs*.

FIG. 379.—Section of the pedicle of a uterine polypus by Chassaignac's curved linear *écraseur*.



FIG. 380.—Aveling's polyptrite: *c*, hook of the female blade; *a*, *b*, male blade.

écraseur, I think this method (called by Maisonneuve *extemporaneous ligature*) is preferable to *écrasement* in such cases.—The difficulties of introducing the chain of the *écraseur* suggested to Aveling¹ the idea of a new instrument composed of a kind of pliable grooved hook, in the concavity of which the pedicle of the polypus may be seized and afterwards crushed by compressing it more and more strongly by means of a bent stem moved by a vice; this instrument is called a *polyptrite*.

7. *Excision*.—This is the quickest method. It has been adopted by almost all surgeons, especially for fibrous polypi, ever since Dupuytren showed its advantages and innocuity (out of 200 cases serious hæmorrhage only occurred twice), and since Siebold² and Mayer³

¹ *Transactions of the Obstet. Soc.*, vol. iv.

² *Frauenzimmerkrankheiten*.

³ *Dissertatio de polypis uteri*. Berlin, 1821.

published an account of the success of their cases.¹ The facility of the operation varies greatly according to whether the polypus has descended into the vagina or is retained in the womb, whether it is of small size, allowing of its being encircled by the finger as a guide to the bistoury, or so large that it can only be detached from the uterus after being drawn down or divided into several fragments.

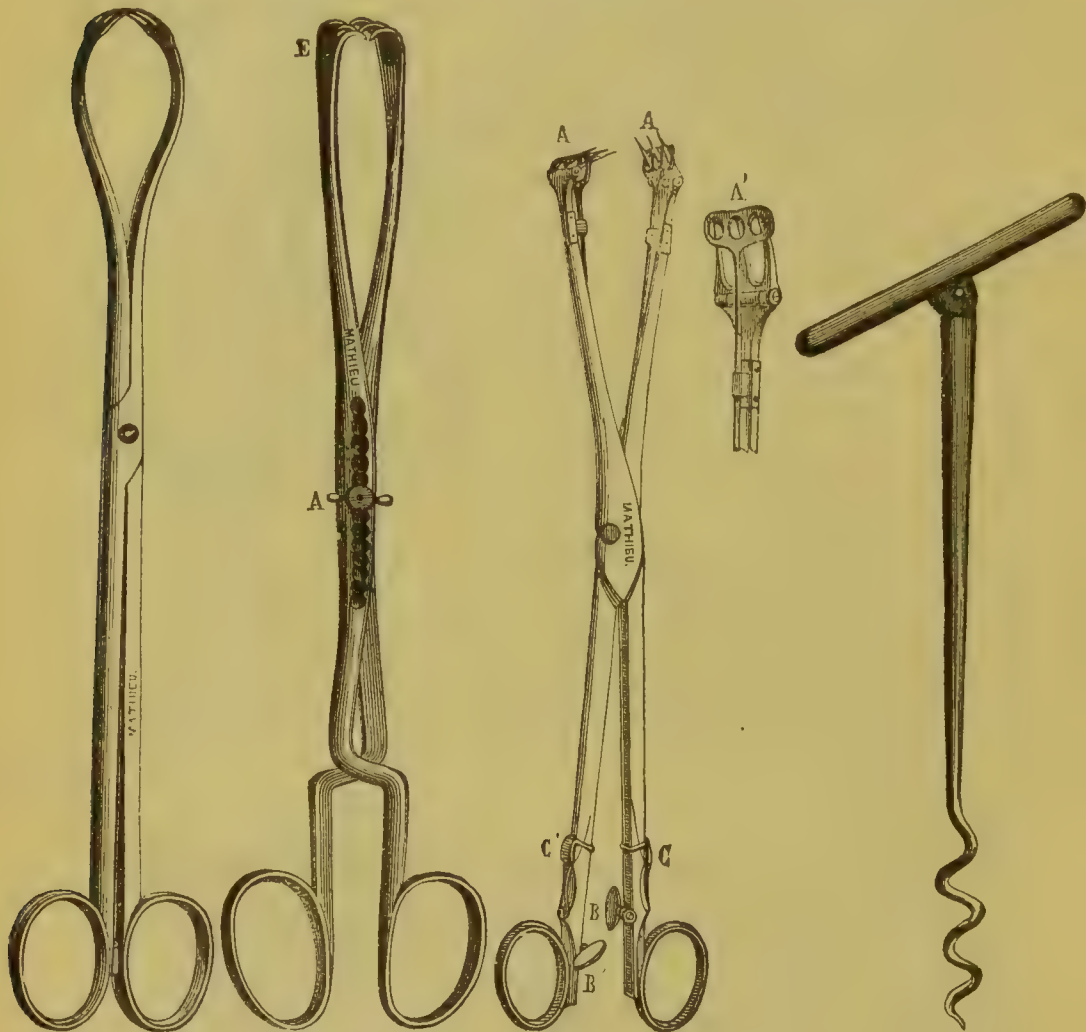


FIG. 381.

FIG. 382.

FIG. 383.

FIG. 384.

FIG. 381.—Chassaignac's tenaculum hook forceps with concave blades.

FIG. 382.—Greenhalgh's sliding tenaculum hook forceps.

FIG. 383.—Robert's tenaculum hook forceps with independent blades and movable teeth.

FIG. 384.—McClintock's screw.

Means of prehension are applied generally to the periphery of the tumour. If the polypus is easily torn it may be better to seize it with polypus or ovum forceps; if it is hard or sufficiently resistant it is better to employ tenaculum hooks, either hooks with a handle and

¹ It must not be forgotten that excision is not exempt from accidents common to all operations. Simpson has seen tetanus supervene (*Gaz. hebdom.*, 1854, p. 686).

of which the claws may be concealed or opened at will, and the number of which may be multiplied according to necessity round the tumour; or Museux's straight or curved tenaculum hook forceps; or Chassaignac's tenaculum hook forceps with strong teeth and concave blades; or Greenhalgh's sliding forceps, the blades of which can be made to seize the tumour at different heights right and left; or Robert's strong forceps with movable teeth, which can penetrate the tumour and be detached from it at will.—When it is impossible to encircle the tumour other means of prehension may be resorted to: for example, piercing the accessible portion of the tumour with a curved needle carrying a cord, by traction on the two extremities of which the polypus may be drawn down and fixed; or Luer's extractor, a kind of tenaculum hook with a handle, the diverging points of which cannot be detached from the tumour after they have penetrated it; or lastly the ingenious instrument in the form of a screw or corkscrew invented by McClintock,¹ which is useful in extracting hard polypi.

Instruments of section are also very numerous. Lobstein adopted the idea of Fabrice d'Aquapendente, and invented cutting spoons or scoops. Mikschik invented a kind of ring ending in a sharp blade, to be placed on the end of the index finger, allowing the pedicle of the polypus to be cut as with the nail. Richerand used special scissors; Siebold and Mayer scissors with blunt points and bent in the form of an S. Usually simpler instruments suffice: a long curved probe-pointed bistoury, or long scissors with a more or less marked terminal curvature or with excentric articulation, or the curved hook with concealed blade invented by Simpson under the name of polypotome.² The instrument is applied to the pedicle guided by the index finger of one hand, and the tissue connecting the polypus with the uterus is divided by repeated small incisions till the tumour is completely separated. The operation is more difficult when the polypus is contained within the uterus. Herbiniaux³, being unable to separate a polypus by ligature, was the first to perform section of the pedicle in the uterus; but the tumour had passed the cervix and had descended into the vagina. Dupuytren taught that the cervix should be divided by a puncture from without inwards when there is question of excision of a polypus contained within the uterus, and that even the vulva may be incised when extraction cannot otherwise be made: he disapproved of the previous use of dilators, which I on the contrary feel bound to recommend associated with ergot: in such cases the rules should be followed which I have laid down when describing the extraction of submucous fibroids, their spontaneous enucleation and their pediculisation in the uterine cavity.

Adhesions of the tumour to the vagina or pseudo-pedicles⁴

¹ *Diseases of Women*, p. 71.

² For figures of Simpson's polypotome and the various tenaculum hooks made by Aubry, Collin, Mathieu, &c., see *Trousse gynécologique* by Courty, p. 37, and following. Paris, 1878.

³ *Parallèle des différents instruments pour le traitement des polypes de la matrice*, p. 107. The Hague, 1771.

⁴ Bérard, *Arch. gén. de méd.*, t. ii, p. 88.

may increase the difficulties of extraction and necessitate fresh excisions which are not without danger. Another peril may arise from inversion of the uterus, which we should beware of producing by too strong traction, and the fatal consequences of which will be avoided by following the rules laid down in the case of fibrous bodies for distinguishing the tissue of the tumour from that of the uterus and for avoiding section of the latter. Lastly, the excessive size of the polypus may give rise to special indications. There may be disproportion between its diameters and those of the vulva or even of the outlet. In such cases there are only two courses to take: 1, to make an incision in the vulva behind, towards the perinæum as Dupuytren did, or two lateral incisions, as advised by Dubois in certain cases of dystocia; 2, to diminish the size of the tumour, which is better; this latter result is obtained by first incising the envelope of the polypus and afterwards enucleating it; or by separating a cuneiform¹ segment of it and bringing the two remaining halves together; or by removing the tumour piecemeal, as one does the fœtus in embryotomy.

Subsequent treatment.—After extraction of the polypus, if there is hæmorrhage it may be arrested by injections, styptics and plugging. The patient should be confined to bed in a posture of semi-flexion, pain being alleviated by the use of narcotics in various forms, and the impoverished constitution restored by the use of tonics, bark, iron, good wine and generous diet.

Recovery is so speedy that it is usually difficult to prevent patients from rising too soon: they should, however, be kept in bed for a week or even a fortnight.

The origin of polypi shows that these tumours are liable to return. Although recurrence is not common, it has been frequently observed,² therefore patients should be watched. When pregnancy and labour are complicated by the presence of a polypus I recommend expectation lest hæmorrhage should follow excision. The reader may be referred to the precepts already laid down for the treatment of fibrous tumours in similar circumstances.

2. Uterine Moles

Moles, false germs, degenerated germs, are always degenerations of one or other of the principal portions of the membranes of the ovum which are destined to envelope the embryo and to serve for its protection and nutrition.³ They result from two causes: 1, from the death of the germ or embryo, the body of which, being macerated and dissolved in the waters of the amnion, is absorbed, leaving no other trace

¹ Velpeau and Chassaignac, *Bulletin de la Société anatomique*, 1833, p. 113. The uterus was momentarily inverted, but was reduced spontaneously.

² Braxton Hicks mentions three cases of recurrence out of forty-two cases (*Guy's Hospital Reports*, 3rd series, vol. xiii, p. 128, 1868).

³ Murat, *Dict. des Sciences médicales*, art. MÔLE, 1819.—Mme. Boivin, *Nouvelles recherches sur l'origine, la nature et le traitement de la môle vésiculaire*. Paris, 1827.—Granville, *Illustrations of Abortion*, 1834.—Cruveilhier, *Anat. pathol.*, liv. i and xvi.

than a fragment of the umbilical cord; 2, from the plastic, nutritive and hypertrophic tendency with which the appendages of the embryo are endowed independently of the impulse conveyed to them by the germ. The plastic tendency, *nisus formativus*, being developed to the highest degree, may persist even after the death of the embryo, even in the transitory organs which constitute its apparatus for absorption and nutrition. The energy and persistency of this tendency, diverted from the young being that no longer exists, are transferred to its appendages, which continue to preserve their normal intimacy of connection with the uterus, and the faculty of absorbing and assimilating nourishment, and which from that time turn to their own profit the materials of nutrition intended for the embryo. Hence the hypertrophic and progressive but at the same time irregular and teratological evolution which the various embryonic envelopes undergo at some point or another. When this evolution takes place in the placenta or in the superimposed elements of the various membranes, separated it may be by interstitial clots, it gives rise to a fleshy mole; if it goes on in the villi of the first chorion or allantois, with or without participation in its vascular ramifications, the hydatidiform mole is produced (wrongly attributed to the production of hydatids). This origin sufficiently justifies the names of *false germs*, *degenerated germs*, by which these moles have been designated.

1. The fleshy mole differs in appearance according to the time at which it is expelled. It varies in size from that of an egg to that of a child's head. When expelled shortly after the death of a very young embryo, it preserves the form of an egg with or without the *débris* of the embryo in its cavity; this is the false germ¹ of Boivin and Dugès; when expelled long afterwards it has the appearance of a more or less hypertrophied placenta. Should the amniotic fluid not have escaped before the expulsion of the mole, the size of the tumour is larger, its tissue often gorged with blood, its central cavity visible and filled with serum; if this fluid has escaped beforehand the tumour is harder, the cavity narrower, sometimes filled with effused blood or with clots arranged in successive layers, at other times containing fragments of the foetus, bones, hair or some trace of the umbilical cord; the surface of the mole may be encrusted with calcareous salts. These moles must not be confounded with simple clots or fibrinous concretions formed in the uterine cavity.

2. The vesicular or hydatidiform mole is a kind of dropsy of the villi of the chorion. The clusters are only ramifications of chorial or placental villi, the subdivisions of which are dilated space by space without the vesicles communicating with each other. This increase of the vesicles and their distension with serum is due to the fact that, after the death of the embryo, the chorion continues to receive materials for nutrition from the uterine decidua in such proportions that the size of the expelled mass may be very considerable. The size of each vesicle varies from that of a millet seed to a pigeon's egg. The entire mole often escapes surrounded by the thickened decidua.

¹ Op. cit., t. i, p. 276.—Courty, *Mécanisme de l'avortement*. Montpellier, 1860, and *Montpellier médical*, 1860.

Diagnosis.—Moles often present symptoms of pregnancy. The patient believes at first, and with reason, that she is pregnant. After some time, whether the embryo dies owing to hæmorrhage from the chorion or placenta and sanguineous effusion between the membranes of the ovum,¹ or whether the membranes are torn as a consequence of dropsy of the amnion, sanguineous effusion, or any other morbid condition of the ovum, there may occur a discharge of amniotic fluid, mucus, blood, or expulsion of the fragments of the ovum or embryo; or it may happen that the patient has not observed the escape of any fragments coming from the product of conception or from the elements contained in the uterus. However that may be, the symptoms of pregnancy gradually disappear or, on the contrary, even when hæmorrhage has occurred and the patient believes she has aborted, these symptoms continue indefinitely without the size of the uterus and abdomen increasing in proportion to the length of time which has elapsed since conception. Therefore the duration of abdominal tumefaction symptomatic of pregnancy beyond the ordinary term of gestation, the irregular form of the belly, the disproportion between the size of the tumour and that which the abdomen ought to have at that period of pregnancy, the absence of fœtal movements and cardiac sounds combined with the appearance of the presumptive signs of conception and pregnancy at the commencement of the malady: such are the principal elements of a differential diagnosis between pregnancy and the presence of a mole in the uterus. Amongst the most frequent symptoms which I have noticed are: vomiting, great debility, leucorrhœa, fœtid sero-purulent discharge, œdema of the feet (seven times), great anæmia (five times), metrorrhagia (forty-one times), and internal metrorrhagia followed by death (once). In 9 cases the development of the uterus was not in proportion with the period of pregnancy.² After some time the symptoms of pregnancy gradually disappear, being replaced by those characteristic of uterine polypi. We must remember that in double pregnancies one embryo may be replaced by a mole, or that a uterus containing a mole may exceptionally become the seat of another conception or of a kind of superfœtation. In these cases the expulsion of the fœtus almost always occurs before the end of pregnancy, the mole being expelled either simultaneously or afterwards.³ Fourteen times the mole has been found in the os at the moment of delivery; in seven cases a portion of the mole was discharged, four times shortly before delivery, three times several weeks previously; six times a fœtus was present; twice there was double pregnancy; once there was a placenta as well; four times there was multiple pregnancy. Lastly, the expulsion of the mole may occur from the third to the fifth month, usually before the end of pregnancy, but sometimes it occurs later. Madame Boivin⁴

¹ Courty, *Mécanisme de l'avortement dans les premiers mois de la grossesse, Montpellier médicale*, 1860, p. 215.

² Hayem, *Revue des Sciences médicales*, 1873, p. 734.

³ Fabrice de Hilden, *cent. ii, obs. 52*.—Dugès and Boivin, *op. cit.*, p. 279.

⁴ *Op. cit.*, p. 288.

mentions a case of this kind in which the expulsion took place twelve and a half months after conception; while some moles have remained in the uterus for several years. The weight of a mole may vary from $\frac{1}{2}$ lb. to 6 lbs.

Treatment consists almost exclusively in the extraction of the mole. We should wait till uterine contraction or hæmorrhage occurs. Sometimes nature herself effects the expulsion of the organic product and there is a true delivery of the mole. If, however, there is hæmorrhage and other serious symptoms we may have to induce expulsion: hemostatics, plugging, dilatation of the cervix by sponge tents and the administration of ergot excite uterine contractions and provoke spontaneous expulsion. When this expulsion is not effected, or only produced incompletely or too slowly, if the mole is adherent to the uterine tissue it should be extracted without delay. The same instruments are used for this purpose as in cases of soft polypi, the best being Levret's ovum forceps. Care must be taken to remove the whole: after extraction, the same care is necessary as after delivery: rest, tonics, generous diet, iron (if there is impoverishment of blood), ergot and hydropathy (if indicated by softening, defective involution, the persistence of hypertrophy or chronic congestion of the uterus): such is the treatment required.

TUBERCLE

Tubercular disease of the uterus and its appendages is probably the rarest disorder of these organs, the least easy to diagnose and the most difficult to cure. In fact the tubercular diathesis, which so frequently manifests itself in the lungs and other organs, so seldom attacks the female genital organs that cases of real tubercle confirmed by autopsy may be counted. I have collected 4 cases of general tuberculation of the genital organs diagnosed during life and verified by autopsy: 1 of tubercular disease confined to the ovaries, especially to the right ovary, coinciding with pulmonary tubercle; 2 of utero-ovarian tuberculation, also coinciding with pulmonary tubercle; in one of these latter patients tuberculo-purulent products had been expelled from the uterus on several occasions during the latter months.

It is remarkable that these alterations are sometimes manifested from childhood. Talamon (*Annales de Gynécologie*, t. ix, p. 416. Paris, 1878) has mentioned a case of ovarian tuberculation with tubercular pelvic peritonitis and suppurative and encysted metritis in a child of 6 years old. The ovaries as well as the uterus may be attacked by tubercle; only they are perhaps less frequently attacked primarily: judging from the cases which I have collected, it is seldom that they alone are attacked. The case is different with the Fallopian tubes: they may be tubercular to the exclusion of other organs, and although I cannot agree with Namias, Cristoforis and Rokitsansky, that the malady always commences with them, I must admit it very frequently does so. It may be the same with the uterus; but it very

seldom happens that this organ is attacked by real tubercle without the annexes and peritoneum being affected. Of all portions of the genital economy the vagina is most seldom attacked.

In these various organs, especially in the tubes and uterus, tubercle may be met with in a state of crudity, softening or suppuration; even caverns may be met with: in one patient there was such a loss of substance on a level with the recto-uterine and vesico-uterine *culs-de-sac* that progressive degeneration might have caused perforation of the bladder and rectum had life been prolonged. The mucous membrane is sometimes softened, decomposed, even detached by suppuration in more or less extensive patches, laying bare the already partially destroyed fibres of muscular tissue. The genital organs are so seldom affected by tubercle that in the immense majority of cases their tuberculosis coincides with pulmonary or general tuberculisation. According to the highest statistics, those of Namias, tubercle of the genital organs is met with 12 times in 100 phthisical patients; in the records of the Institute of Pathological Anatomy of Prague, published by Dittrich, we find 1 case of uterine tuberculisation in 40 autopsies on tuberculous women; Puech has only met with 3 cases in 150 autopsies; Cless of Stuttgart 1 in 70; and as for myself I have certainly not met with more than 2 in 100.

Tuberculisation of the genital organs does not only coincide with pulmonary phthisis, but is also met with in connection with osseous lesions, tubercle in the bones, articulations¹ and other organs.

In the numerous coincidences just mentioned tuberculisation of the genital organs usually follows pulmonary phthisis, being the result of the serious alteration of nutrition or cachexia, which often passes unnoticed amidst the general disorder of all the functions. It may, however, precede it. Tyler Smith has published a case of primary tuberculosis of the uterus and ovaries followed by pulmonary phthisis causing death. It may even exist alone and be discovered by autopsy at a period in its development when the lungs are not as yet affected: Siredey² has published a remarkable case of isolated tubercle of the Fallopian tubes and peritoneum; Tomlinson³ one of tubercle of the uterus, tubes and ovaries, with this peculiarity, that the uterus had acquired a considerable size before the appearance of tubercle in any other organ. In these cases in which, contrary to the law laid down by Louis, the lungs are healthy or at least not attacked by the morbid product, tubercle of the genital organs attracts the attention of the physician to the phenomena manifested in the pelvis.

Diagnosis.—It is often ignored, sometimes suspected, seldom confirmed; for there are no symptoms which allow of genital phthisis being diagnosed with certainty.⁴ It can never be ascertained with certainty at one visit, as Brouardel has justly remarked; for of the three

¹ Cruveilhier, *Anat. path.*, iv, 674.—Crocq, *Arch. gén. de méd.*, 1860.

² *De la fréquence des altérations des annexes de l'utérus dans les affections dites utérines.* Thèse de Paris, 1860.

³ *Obstet. Transact.*, 1864.

⁴ Lebert (*Archiv für Gynekologie*, iv, Heft 3, 1872).

elements on which it may be based, the general condition, the local state and the course of the disease, the latter is the most important.

Subjective signs.—The general symptoms are the most prominent, the expression of the face, the phthisical habit of the body, symptoms of tubercle in the lungs or other organs coinciding with the local phenomena, vague pains in the hypogastrium or loins, a disagreeable sensation of fullness and weight in the pelvis and, when the uterus is enlarged, frequent desire for micturition, constipation alternating with diarrhœa, difficult micturition and defecation. From the beginning menstruation is suppressed, especially when the ovaries are affected or atrophied and there is amenorrhœa, as in the patients that I have seen. Brouardel considers leucorrhœa to be the prelude to the disease: this may be the case if the seat of the disease is in the uterus and especially in its mucous membrane; but usually the peritoneum is affected simultaneously with the genital organs, or at least is inflamed all round them. Hence acute pain, nausea, vomiting, distension, fever, &c., due to limited peritonitis recurring at intervals, to inflammatory exacerbations and to attacks of acute inflammation which is grafted on to the chronic phlegmasy. Lastly, when the malady progresses slowly, invading the whole of the genital economy, ascites is sometimes produced.

Objective signs.—Palpation shows increased size of the uterus or the existence of a peri-uterine tumour, as well as the resistance indicative of chronic peritonitis: the intestines are bound together by false membranes and distended by gas.—Digital touch reveals a displacement of the uterus; this organ is carried out of the axis of the vagina, especially behind, fixed and sometimes retroflexed. In the vagino-uterine *culs-de-sac* we perceive inequalities, nodulations and bands of adhesion, painful on pressure: small, rounded, hard, non-fluctuating nodes are observed on depressing these *culs-de-sac*, especially the posterior or lateral one, or by rectal touch.—The diagnosis is somewhat facilitated by speculum examination, which discloses cervical erosions and the existence of a leucorrhœal discharge, which may be submitted to microscopical examination.

Treatment.—The prognosis of this disease is very serious, though less so than that of pulmonary phthisis: if phthisis is exceptionally curable tuberculosis of the genital organs ought to be more so, as these organs are not indispensable to life. The prognosis is probably also less serious when tubercle is limited to the uterus and there is neither peritonitis nor ascites: in this case we may hope to arrest the disease.—We can, however, only treat the affection, having but little direct influence on its local manifestation. Residence in a warm climate and in the country, moderate exercise, generous diet, tonics, cod-liver oil, preparations of iodine, sulphur waters and sea bathing should be recommended. Attention should be paid to the chest, and the digestive functions regulated and the strength supported. We must try to prevent relapses by prescribing absolute rest for the genital economy.

CANCER

Under the name of cancer I include every disease characterised by the double tendency: 1, to destroy the tissue of the organ; 2, to extend to the neighbouring organs more or less rapidly, whatever may be the affections which assist in the development of this disease or the anatomical forms which it assumes. The great number of women attacked by uterine cancer shows the importance of studying the commencement of this disease. Out of 87,348 persons who died of cancer in England between the years 1847 and 1861, of whom 25,633 were men and 61,715 were women, there were about 3000 cases of cancer of the uterus.¹ In 1875, 3640 men and 7766 women died of cancer in England.² According to Tanchou³ the relative proportions are 2996 cases of uterine cancer against 1147 cases of cancer of the breast. Out of 8500 women observed by Mayer,⁴ 332 were affected with malignant tumours, 119 with cancer of the cervix, 146 with cancer of the uterus and vagina, 8 with cancer of the vagina, 10 with cancer of the vulva, 2 with ovarian cancer, 8 with mammary cancer and 39 with cancer of organs not connected with the sexual economy.

Diagnosis.—This is especially difficult at the commencement. I shall describe successively the signs of the first period, those of confirmed cancer and those of the subsequent cachexia.

I. *Uterine cancer at the commencement—subjective signs.*—The symptoms which may become presumptive signs are very equivocal *at the commencement* of the malady. They ought to arouse the anxiety of the physician who should attract the attention of his patients to them. The *local symptoms* are pain, hæmorrhage and leucorrhœa.⁵

1. Spontaneous *pain* and even induced pain is often absent. Pain occasioned by walking is absent more frequently than that produced by coitus, pressure and touch. This symptom, which becomes the source of great suffering when the cancer is in full development, when its ravages have destroyed a portion of the organ and especially when it makes itself felt anatomically and physiologically by the neighbouring organs, is on the contrary absent at the commencement of the disease and even at a period when not only other symptoms have attracted the attention of the patient, but when direct examination proves to the physician that the most energetic treatment is powerless

¹ Simpson, *op. cit.*, p. 140.

² West, *op. cit.*, p. 367.

³ *Recherches sur le traitement médical des tumeurs cancéreuses du sein*, p. 258. Paris, 1844.

⁴ *Monatsch.*, 1868, Bd. xxxii, S. 245.

⁵ According to West, out of 166 cases the *first* local symptom was:

In 30, pains of different kinds, varying in intensity.
 „ 77, hæmorrhage usually profuse and without pain.
 „ 23, hæmorrhage accompanied by pain.
 „ 15, leucorrhœa, sometimes infectious, with pain.
 „ 21, leucorrhœa or other discharges without pain.

before such extensive organic disease. I have seen women only succumb to uterine cancer several years, sometimes seven or eight years, after the probable period of its first development. I therefore regard statistics on this point as mere approximations; the average duration of the life of a woman from the time she is attacked by cancer of the womb is according to Lebert¹ a little more than sixteen months and according to West² a little more than seventeen months. On the other hand there are cancers which run through their several stages much more rapidly, *e.g.* in three and a half months; West, who gives them the name of *acute cancers*, says that he has only observed these very rare cases in young women shortly after delivery or miscarriage. I have difficulty in accounting for the silence of writers as to the absence of pain in the first period of the development of uterine cancer. Many have been struck by the pains felt by patients at the time when they were consulted; few have inquired about the pains experienced before this time. As for myself, I have observed that epithelioma is usually indolent even at an advanced period, and indeed till its size, by causing an increase of weight and discomfort in the vagina, a difficulty in marital intercourse, &c., produces a feeling first of discomfort and then of pain; but as to these acute, darting pains, described as characteristic of cancer, I have never known them appear till an advanced period of the disease. I have often been consulted by women in whom I discovered upon examination an incurable disease, death following within three months, and yet the symptoms were so slight from the absence of acute pain that attention had never been called to the uterus. Some have been able to continue marital intercourse without suffering and have become pregnant; others have undergone great fatigue without inconvenience. The majority have continued to sleep the whole night without being awakened by pain. Even the most characteristic forms of cancer, scirrhus and encephaloid may reach an advanced period of their development without having produced pain, at least those acute, darting pains described as characteristic of this affection. I have seen a case of scirrhus which had destroyed the posterior lip of the cervix and even a portion of the body of the womb, reducing the patient almost to a state of marasmus, without pain having ever assumed the acute character supposed to be characteristic of cancer. Thus pain, far from being in proportion to the gravity of the disease, is frequently the reverse, and indeed we may boldly lay down as an axiom in such cases *Nimium ne crede dolori*.

2. *Hæmorrhage* is seldom absent at the commencement of this terrible disease. Constant in internal and interstitial cancer it is even usual in cancer of the cervix and in the most superficial cancrioid tumour of this organ.

At first the loss of blood usually assumes the simple form of menorrhagia. This, however, is soon followed by metrorrhagia, occurring at longer or shorter intervals in the intercalary period; these hæmorrhages at last become almost continuous and are so abundant

¹ *Mal. cancér.*, p. 269.

² *Op. cit.*, p. 396.

that they enfeeble the patient and produce anæmia. They are arrested but recur again till at last they cease either spontaneously or under the influence of the general and local hemostatics that have been administered.

3. *Leucorrhœa*.—This symptom sometimes precedes hæmorrhage, frequently accompanies it, follows it, and may be considered a presumptive sign the value of which is greater than that of hæmorrhage owing to the coexistence or succession of these two symptoms. The leucorrhœa may be mucous when it expresses the reaction on the uterine mucous membrane of cancer cells or cancerous infiltration into the muscular tissue of the womb; it is more frequently serous, resulting from the superficial exudations of a fluid on the internal surface of the body or cervix, the papillary or epithelial element of which begins to undergo a modification, soon giving rise to cancroidal vegetations which may be developed into *cauliflower excrescences* projecting into the vagina. Serous in its origin before the appearance of hæmorrhage, it sometimes preserves this character in the interval between these discharges of blood; more frequently it becomes sero-sanguinolent, sero-purulent, and at last ichorous. It differs entirely from the glairy discharge of catarrh, the purulent discharge of inflammation of the uterine mucous membrane, and from the muco-purulent discharge which partakes of the characters of the two preceding in its aspect and origin. It usually only becomes sero-purulent after the hæmorrhagic period, and ichorous after confirmed disease has made such progress that ulceration is imminent or even declared at some points. Whether partly sanguinolent and partly purulent the loss always assumes a very marked serous character; it is abundant, staining the linen like reddish water in place of making a spot like milk, starch or yellowish-green pus. This discharge, as described by patients arouses the suspicion of the physician; it is sometimes very acrid, and cannot fail to be an important presumptive sign at the commencement of the disease. Although it may not yet have acquired the fœtid odour which characterises it when ulceration and destruction of the tissues have rendered it ichorous and mingled with it fragments of normal or pathological tissue, yet the absence of this odour, which afterwards becomes so characteristic, ought not to inspire the practitioner with false security.

General symptoms are usually slight or altogether absent. Neither digestion nor nutrition is disordered. These functions are only disturbed when the disease, by its extension and ulceration, and by the inflammation of the neighbouring tissues has reacted on the whole economy, setting up fever, and revealing by undoubted local symptoms the existence of the organic lesion. Of all the general symptoms, the first to appear are usually sympathetic nervous disorders, vague symptoms of vital uneasiness, hysterical symptoms, dragging at the epigastrium and between the shoulders, &c., but it is very difficult for patients to suspect the nature, gravity and even the seat of disease from these symptoms. I do not think the age and history of the patient are of much help to the practitioner. The climacteric has

been mentioned as a favorable age for the development of this malady. My experience does not confirm this opinion. The most common period for cancer as for most uterine maladies is that of sexual activity, between the ages of thirty and fifty. I have, however, seen it in young women of twenty and twenty-five, and in old women of sixty and seventy. Nor must it be thought that married women alone are subject to this disease, I have frequently seen virgins attacked by it, but in the latter the development of cancer seems more frequently to coincide with the approach of the menopause. As to heredity I think its influence is undoubted notwithstanding the contrary opinion expressed by Lebert.¹ This circumstance should be taken into account not only in reference to the diagnosis but also in the prognosis and treatment. I have seen a great many examples of heredity in cancer of the uterus. Sometimes it can be traced to the mother, grandmother, aunts or sisters of the patient, and sometimes to the father or paternal side of the family. I attended a patient for cancer of the cervix in whom the influence of heredity both as to nature and locality was remarkably exemplified: two aunts had succumbed to cancer of the cervix, and the father to cancer of the prostate. I am at present attending a lady suffering from advanced uterine cancer, whose mother died ten years ago of the same disease. I have another patient who is almost in the same condition, whilst her daughter, aged twenty-one, who was only married three months, having lost her husband two years ago, has suffered since her marriage from metritis accompanied by uterine granulations.

Objective signs.—These may enable us to form a certain diagnosis from the very commencement of uterine cancer. The pain produced by pressure, especially by the association of palpation with digital touch, the increased size of the organ, its partial tumefaction on one surface or point, the globular form of one or more tumours, the multiple and submucous indurations of the cervix, or the development of hard resisting excrescences which are at the same time friable and bleeding: the dilatability of the cervix, the appearance of its nodosities, its patches of violet colour with vascular venous injection round them, or the appearance of characteristic excrescences of which I shall speak immediately, are all symptoms which, when added to those of pain and previous hæmorrhage, of serous, or sero-sanguinolent discharges, disordered nutrition, puffiness of the face or emaciation, feverishness, &c., soon become certain signs of the existence of cancer of the womb.

II. *Confirmed uterine cancer.*—When cancer is confirmed, or rather when it has reached the period of ulceration, doubt is no longer possible. At this period the general symptoms are considerably aggravated. They vary in different patients; but disorders of nutrition always occur, emaciation follows, often accompanied by fever. When a patient complains of pain, metrorrhagia, or serous leucorrhœa, we may suspect the gravity of the malady by merely feeling the pulse: its frequency, the dryness and heat of the skin, especially the palm of the hand, are alarming presumptive symptoms. Pains, ichorous dis-

¹ Op. cit., p. 273.

charges, emaciation, debility, fever, the alteration of the features and colour of the face leave no doubt as to the existence and nature of the disease; we have merely to ascertain the extent of it, and institute the most appropriate treatment for arresting its progress and mitigating its effects.

During this period, which may have a rapid evolution, although its course is usually slow, the constitution of the patient is gradually impaired by the establishment of the cancerous cachexia although hæmorrhage has often ceased. There are, however, fungous cancers or tumours which are developed rapidly and characterised by rich venous circulation, great friability and a tendency to destruction: in this case hæmorrhage continues to recur; I have seen cases in which it recurred to the very end, and so abundantly as to determine great anæmia, hastening the end in such a marked way that death seemed to be the immediate result of the loss of blood. With the exception of these cases leucorrhœa is the only discharge which characterises the advanced period of the disease. These discharges are reddish, sero-sanguinolent, ichorous, fetid, and very abundant, and so characteristic that they enable the experienced physician to form a probable if not a certain diagnosis as soon as he enters the room or raises the dress of the patient. The pain is not less characteristic; in addition to the feeling of weight and discomfort in the pelvis, aching in the groins and thighs and the pain produced by pressure, there is dull constant suffering aggravated at intervals, sometimes increased to an excruciating degree. The continuity, nature and acuteness of the pain depend on several causes.

The nature of the tumour and especially its increasing size, its extension to the sensitive organs whose functions it disturbs, the inflammatory symptoms which it evokes in the neighbouring organs (the vagina, bladder, rectum, and peritoneum), making the performance of their functions difficult if not impossible, preventing all exercise and change of posture owing to its extension as far as the neurilemma of the nerves belonging to this region: these are the causes of those exacerbations of pain which digital touch almost always produces with significant intensity. The most serious local symptoms are then manifested, in consequence of the invasion and destruction of the organs contained in the pelvis. The inflamed bladder immovably fixed by the invading cancer and compressed on a level with the cervix can no longer expel the urine;¹ the patient requires to be catheterised, as spontaneous contractions of the viscus cause the most acute pain. In the end a vesico-vaginal or vesico-uterine fistula is formed by ulceration, so that patients after having experienced great difficulty in passing their urine find it impossible to retain it. The same phenomena take place in the rectum, the vagina becoming a cloaca in which cancerous ichor and uterine discharges are mingled with urine and fecal matters and are discharged by the vulva. Ulceration

¹ One of the ureters may be invaded, contracted, even obliterated, and afterwards dilated above the contracted point, as well as the calices of the kidney, the glandular substance of which atrophies.

of the uterine tissue may hasten the result when the body and especially the fundus of the uterus is attacked by cancer: I have seen a



FIG. 385.—Cancer of the cervix extending to the bladder, rectum and upper portion of the vagina; communication established by ulceration between these three organs: *u*, uterus; *v*, vagina; *r r*, rectum; *b*, bladder.

patient succumb to rapid peritonitis caused by perforation of the fundus of the uterus; another succumbed in a few days to pelvic peritonitis consecutive to a similar ulceration of the posterior wall of the organ. Digital touch enables us to ascertain the progress of the disease, its seat, and the exact degree it has reached in its destructive course. Sight confirms the information, but the use of the speculum is often interdicted, owing to the pain caused by the introduction of the instrument and the frequent impossibility of embracing the cervix or even of discovering the orifice, on account of its position behind and of the enormous tumefaction of its two lips, and also to the facility with which the tissue may be lacerated and give rise to fresh hæmorrhage.

Diversity of seat and form of uterine cancer.—It is at the period when the malady is confirmed that we can distinguish the various forms of cancer,¹ at least from the symptomatic point of view. These are the elements which sight, vaginal and rectal touch, combined with palpation and the use of the sound, furnish for the differential diagnosis of the various forms of cancerous disease.

¹ Ernest Wagner, *Krebs der Gebärmutter*. Leipsic, 1858.—Cornil, *Des tumeurs épithéliales du col utérin* (*Journal d'Anatomie et de Physiologie de Robin*, 1864). Scirrhus and encephaloid only differ in the density or rarefaction of the solid elements proportionally to the abundance of the cancerous fluid (see *Recherches sur l'histologie du cancer*, in my *Clinique chirurg.*, p. 59. Montpellier, 1851). Cancroid, so named by Lebert (*Physiologie pathologique*. Paris, 1846), better known by the name of *epithelioma*, given to it by Hannover (*Das Epithelioma*. Leipsic, 1852), and under which it has been described by Paget (*Lectures on Tumours*, vol. ii. London, 1852), is placed by Houel (Cruveilhier, *Anat. path. gén.*, t. v, p. 296. Paris, 1864) with fibro-plastic tumours in the

A. *Cancer of the Cervix*

1. *Epithelioma of the vaginal portion of the cervix*.—The first modification made in the normal form and structure of the cervix by the development of epithelioma on its vaginal portion is the alteration of its surface, which becomes irregular, being covered with numerous elevations irregularly developed, situated like granulations round the orifice or on one of the lips, always more on one lip than the other although adjoining the orifice, having the appearance of papillary hypertrophy, affecting the epithelial element much more than the dermis of the papillæ and presenting a striking analogy with epithelioma developed on other parts of the body, especially at the natural orifices, the vulva, anus, eyelids, and above all round the mouth, in fact, with the usual form of buccal and particularly labial cancer.—Frequently it is developed over the whole surface of the cervix, continuing regularly and forming a large excrescence in the form of a cauliflower like an inverted mushroom, projecting in every direction beyond the surface of the cervix itself, the orifice of which is often found with difficulty. Frequently while produced in the same way it invades the two lips unequally or is only manifested on one of them, leaving the os uteri behind or in front according to whether the excrescence is situated on the anterior lip, as occurs most frequently, or, as is more rarely the case, on the posterior lip. At this period it is important to distinguish epithelioma from other organic alterations of the cervix, such as diphtheritic or fungous ulcers, granulations and vegetations. This distinction is easy, for the principal characters of epithelioma are: inequality of development of the elementary and secondary groups, the latter being more voluminous and formed by the association of epithelial cells, which the microscope reveals as essential elements of their structure; compactness of tissue, the relative fragility of which depends on this very compactness, hardness and non-elasticity; a tendency to bleed after the lacerations caused by touch; if the epithelioma is not vegetating, it offers a characteristic aspect; hard, nodulated, irregular, vascular and, on microscopical examination, disclosing to view the epithelial cells; there is a serous or sero-sanguinolent secretion from the surface of the epithelioma, or there is a purulent ichorous secretion from the ulcerated points of

class of pseudo-cancers. It is of little practical importance whether, after Lebert and the French school, cancer is distinguished from canceroid by the expressions heteromorphous and homœomorphous, the former being attributed to the organisation of new elements in a diseased blastema, and the latter to the morbid proliferation of normal epithelial cells; or whether, after Virchow, whose ideas have been adopted by the German and English schools, both of these tumours are attributed to a morbid hyperplasia of normal cells deviated from their type and urged into a course of pathological proliferation by the unknown cause which presides over the development of cancerous affections.

The development of cancer in the uterus does not exclude that of fibroma in the same organ, tubercle in the lungs if not in the womb, nor of syphilitic chancre on the cancerous ulcer itself. Such cases have been known, and far from neutralising each other these various affections seem to concur to hasten death.

the tumour, it being seldom that some portion, some exuberance, is not attacked by ulceration.

This form of cancer if not arrested by ablation is developed with frightful rapidity. The tumour formed by these excrescences, the various branches of which press against each other, presenting the appearance of the vegetable from which they take their name, soon exceeds the dimensions of an egg and sometimes acquires an enormous size, even filling the cavity of the distended vagina, compressing the neighbouring organs and mechanically hindering their functions, even before it has invaded the upper portion of the uterus. As a rule, however, it gradually extends to other points; it may even assume this mode of development altogether, only giving rise to slight excrescences, but spreading in every direction over a large surface all round the central excrescence or starting-point. At first the vaginal portion of the cervix is attacked and soon afterwards the vaginal mucous membrane itself, behind, before, and on both sides; the finger perceives nodules of induration pressed one against the other round the cervix, isolated a little further on, often disseminated at a great distance, preceding the excrescences which are soon developed on these centres; one would say that the cancer had spread its roots in these different directions, or they are like suckers or seeds scattered profusely near the centre of the disease and more sparsely further off. The tumour next invades the uterine cavities, beginning with the cervix and ending with the body.

Epithelioma of the cervical cavity is less easy to diagnose as its situation conceals it from sight. The same circumstance hinders its development as a vegetating excrescence, in consequence of which it may extend more deeply, either towards the uterine cavity or in the thickness of the muscular tissue before showing itself at the orifice. It produces hæmorrhages and leucorrhœal discharges, however, even perhaps at an earlier date; and, as it tends to vegetate, it dilates the cervical cavity, softens this organ and presents itself at the point which offers the least resistance, *i. e.* the softened and dilated os, which soon participates in the progress of the organic degeneration.

2. *Parenchymatous cancer of the cervix*, if it is allowable thus to name cancer which is developed within the tissue proper of this organ, especially in its muscular tissue, may also be diagnosed at an early period and more easily than cancer of the body of the womb. It is characterised by increase of size and heat of the cervix, by its general induration, irregularity and the sensation of hard, globular, often multiple bodies on one of the lips observed in the thickness of the cervix at a variable depth; there is no resistance nor sensation of fluctuation, no primary degeneration of the mucous membrane nor of its epidermis; but there is a congestive condition, an unequal dark red coloration, red on the projecting portions, violet on other parts, especially on the circumference of the globular projections, and capillary venous injection round these deep tumours or nodulations which are sometimes very painful on pressure (Fig. 124, p. 139). Cancer developed in the tissue of the cervix may assume the form of scirrhus or encephaloid

according to the density of its tissue, the closer grouping of its elements, the predominance of fibres and fibro-plastic elements over the cancer cells or the presence of a variable quantity of cancerous fluid; but as these forms when developed in the uterine tissue do not present different characters from those which they offer when developed in other tissues I shall not here give a comparative description of them, but merely make two remarks on the subject. The first is that scirrhus has seemed to me more common than encephaloid; the second, that when ulceration attacks these tumours and has a destructive tendency it may cause as extensive destruction in scirrhus as in encephaloid. I remember having seen a young lady in whom scirrhus of the cervix, which was easily diagnosed by the tumefaction and hardness of the anterior lip and of the rest of the uterus, and which was developed originally in the cervix, had very soon extended to the whole body, and when attacked by ulceration in a short time caused such destruction that the whole posterior lip and almost the entire posterior segment of the uterus had disappeared, allowing the finger to penetrate behind the cervix and the anterior segment of the organ into a vast cavity full of ichor and cancerous detritus, at the end of which the fundus of the womb could be felt.

B. Cancer of the Body of the Uterus¹

1. There is no doubt that *epithelioma* may be developed in the uterine cavity on the mucous membrane of the body as well as on that of the cervix, and as on the vaginal portion of the latter assume the vegetating form and propagate itself over the whole womb to the neighbouring organs. Having ascertained the existence of the presumptive symptoms just described, direct examination by digital touch, speculum and sound leads to a certain diagnosis. In the case of cancer of the uterine cavity, as in that of polypi or any other product developed in this natural cavity, contractility of the organ is excited and is manifested by expulsive efforts, the effect of which is to tumefy, soften, and dilate the cervix. If we take advantage of this tendency, encouraging it by the introduction of dilators, not only may the sound be introduced into the uterus but the finger itself, the delicate sensibility of which discovers sufficient elements for forming a certain diagnosis in the inequality of the cervix, the fragility of the tissue, the form of the excrescences, and the presence of detritus apart from the ichor, a certain quantity of which it brings away mingled

¹ Although cancer of the body is undoubtedly less common than that of the cervix, it is not very rare. I have seen some 20 cases, Seyfert has seen 5, Kiwisch 2, Dittrich 2, Lebert 2, and Scanzoni 2. Out of 429 cases of uterine cancer seen in the hospital at Vienna, there was only one case of primary cancer of the body. Säxinger (*Monatsch.*, xxiv, 71) has collected 2 cases, Simpson 1 (*Gaz. hebdom.*, 1854, p. 389), Ballard 1 (*Provincial Medic. Journal*, May, 1851), Recklinghausen 1 (*Monatsch.*, xx, 169), Forget (*Gaz. méd.*, 1851, p. 640) has published 2 cases; lastly *La Gazette des hôpitaux*, 1861, p. 208, has recorded 3 cases taken from Huguier and Demarquay's practice. See also Pichot, *Étude clinique sur le cancer du corps et de la cavité de l'utérus*. Thèse de Paris, 1876.

with small fragments of epithelioma. This examination should be made with great care, as cancer of the cervix does not always prevent pregnancy.¹

But when recent hæmorrhage and presumptive signs of cancer of the body remove all idea of pregnancy, we may make such an examination in order to determine whether it is a case of cancer, uterine catarrh, granulations, uterine fungosities, or polypi, because these latter maladies are curable and require prompt and active therapeutical treatment. We must, however, remember that if the malady is advanced perforation of the uterus weakened by ulceration is to be feared (*see* p. 697).

2. *Interstitial or parenchymatous cancer*, developed in the thickness, in the interstices of the tissue proper of the organ may, as has been demonstrated by autopsy, be either scirrhus or encephaloid; may be developed in either of the two walls before extending to the rest of the organ; may, like fibroids, increase towards the external surface of the uterus or towards its cavity, projecting in one direction or another; and may, lastly, ulcerate at some point, especially on the side which looks towards the uterine cavity. Apart, however, from the general symptoms and from the tardy proof afforded by products of ulceration, no symptom can be considered as certain nor distinguish it positively from fibroids, tuberculous masses, or other interstitial changes of the body of the womb. Besides, cancer may exist in the uterus simultaneously with tubercle, pus, or fibroids. Although, however, several practitioners have met with fibroids and cancer in the same uterus, they have never seen fibroid bodies degenerate into cancer.² Only the differential diagnosis is more difficult than the anatomo-pathological distinction. In such cases, therefore, we must take into consideration the history of the patient, heredity, general symptoms, and all the subjective signs which can increase the mass of evidence, though it may not lead us to a certain diagnosis until the disease has reached an advanced stage.

III. *Cancerous cachexia*.—Cancer invades the cervix from the body and *vice versâ*; from these it extends to the vagina, bladder, rectum, and the fibrous tissue interposed between these organs. The Fallopian tubes and ovaries are affected less frequently, whilst on the contrary they participate more often in the extension of tubercular disease. The inguinal and pelvic ganglia are seldom enlarged in the beginning but are attacked at a later period, especially the latter, as well as the lumbar and mesenteric ganglia in cases of considerable generalisation of these diathetic localisations. The lymphatic vessels, even the thoracic duct, may like the ganglia be affected by the disease

¹ It would seem that pregnancy arrests the course of cancer, except in the cases in which it terminates prematurely by abortion. But it would also seem that the course of the disease recommences more rapidly after delivery, hastening the death of patients. See West, *op. cit.* p. 409. London, 1864.

² Cruveilhier, *Anat. path. gén.*, t. iii, p. 693, and t. v, pp. 183, 288. Paris, 1861.

or contain cancerous fluid.¹ Lastly, the neighbouring veins are often attacked, either from the malady invading the tissue, or from the transport of the cancerous fluid giving rise to malignant vegetations on their internal membrane.² The nerves themselves do not escape from this propagation.³

Cancer does not increase without damage to the surrounding tissues and organs. The extension of the tumour and the ulcerative process which manifests itself simultaneously determine the development of inflammatory phenomena not only in the affected organs but in neighbouring tissues within a certain radius, assuming different forms according to the nature of the organs and tissues. For example, in parenchymatous and in fibrous tissue, inflammation produces induration; at a later period it may cause softening and, though rarely, abscesses, assisting the cancerous ulceration by acting in the same direction and producing analogous results. On the surface of the peritoneum, on the contrary, it produces albuminous, fibrinous and purulent exudations which give rise almost always to adhesions between the two contiguous surfaces of this serous membrane which help to keep up displacement of the organs, to hold them fixed in vicious positions and to increase pain; thus the folds of the broad ligaments adhere to each other, the Fallopian tubes or ovaries may adhere to the uterus, rectum, and intestines, leaving between the adhesions winding cavities filled with serum, the last retreat of chronic inflammation of the peritoneal membrane.—Peri-uterine inflammation is not the only cause of the immobility and pain; the invasion of the organs contained in the pelvis gives rise to the formation of a cancerous mass in the period of cachexia which sometimes confuses together the vagina, bladder and rectum, preventing the accomplishment of their respective functions, or what is worse establishing a communication between them so that the vagina becomes a kind of cloaca common to all the excretions (Fig. 385). Happily for the patient the cachexia gradually produces exhaustion and consumption; when a continued fever, increasing in the evening and assuming the hectic form, soon produces the last stage of marasmus quickly followed by death.

Treatment.—There is no absolute cure for cancer as far as we know; and the relative curability of uterine cancer appears to depend on the nature of the malady, and on its position in the various parts of the womb.

With regard to the *nature of cancer* epithelioma is evidently more curable than scirrhus and encephaloid; the vegetating form of epithelioma seems to me also more curable than its corroding form, tuberculous cancer more so than ulcerous, and dry more so than moist cancer. Epithelioma, whether of the uterus or lips, is usually less dependent

¹ Hourman, *Mémoire sur le cancer utérin* (*Revue méd. franç. et étrang.*, 1837).—And Lebert, *Maladies cancéreuses*.

² Cruveilhier, *Anat. path. du corps humain*, t. ii, liv. 23, and *Anat. path. gén.*, t. v, pp. 226, 275. Paris, 1864.

³ V. *Supra*, p. 696.

on a general affection than on an alteration of local vitality. There are more examples of labial epithelioma successfully treated by operation without return than of scirrhus or encephaloid. It is the same with epithelioma of the cervix; I have seen so many examples of epithelioma being operated on successfully and not followed by relapse that I never despair of attempting complete ablation. Therefore it is well worth while to discover the best methods of treatment and operation.

With regard to the *seat*, cancer of the cervix is the only one which admits of curative treatment. In the cervix itself scirrhus or encephaloid, apart from being manifestations of a diathetic affection for which we know no remedy, are usually developed too deeply to allow of our exceeding the limits of the disease; and operation in their case is only practicable when they present themselves under certain favorable conditions. These conditions are the following:—The cancer must occupy the vaginal portion of the cervix; it must not extend to the vaginal insertions still less to the vagina itself, as often occurs; the cervix above the organic alteration must be indolent, only slightly tumefied, supple, soft, without suspicious indurations, in short, in a normal condition.

I. *Curative treatment*.—We cannot count on any specific but must limit ourselves to restoring the constitution by tonics and alteratives, the value of which has been proved by experience. We should prescribe a strengthening diet, milk, residence in the country, or at a watering place appropriate to the temperament, hydropathy and, according to the requirements of the case, the use of iron, preparations of gold, arsenic and even of hemlock. Ablation, however, is the only curative treatment effected either by the use of caustics or by operation.

A. The destruction of *cervical cancer* by *caustics* is the most seductive means for an inexperienced practitioner. Unfortunately it is not successful whilst its innocuity is only apparent. Caustics are useless because they cannot reach even by repeated applications the whole extent of the evil: caustics or solvents of cancerous elements such as gastric juice (Sennebier of Geneva), acetic acid (Broadbent), tincture of sesquichloride of iron (Kiwisch), the solution of nitrate of silver (Thiersch, Hermann, Laurent, Kuhn, Nussbaum¹), perchloride of iron (Gallard),² only destroy a small portion of the tumour and may set up fatal inflammation.

Caustics are hurtful not only because they may by spreading attack other parts than those to which they are applied, but because their action, though incomplete as a destructive, is energetic as an excitant and frequently determines a proliferation the effects of which have always seemed to me to increase the evil it was intended to lessen. I neither except acids, nor acid nitrate of mercury, nor Canquoin's caustic, nor the actual cautery. I would only sanction the use of the

Monatsch. für Geburtsk., 1867, Bd. xxx, S. 230.—*Bayerisches aerztliches Intelligenzbl.*, Heft 17, 23 April, 1867.—*Gaz. hebdom.*, 1867, p. 333.

² *Gaz. des hôpitaux*, July 6, 1867.

latter on a very superficial surface of epithelioma or on a very limited corroding cancer which could be destroyed entirely by one application. This is sometimes effected by applying a small circle of Canquoin's caustic to the cervix and a cylinder of the same plaster in its cavity; I have for a long time adopted this method, which is somewhat similar to that recommended by Maissonneuve under the name of *cautérisation en flèche*. We may also make an interstitial injection of a solution of chloride of zinc (Guichard, *Annales de Gynécologie*, 1877). In whatever way the Canquoin is applied we should prevent the possibility of its displacement and the consequent destruction of healthy parts by retaining it in position by methodic plugging of the vagina with oiled cotton wool and by keeping the patient in bed. It is left for a longer or shorter period according to the depth of destruction required; and it may be re-applied for several days, the plugging being continued to prevent cauterisation of the vaginal mucous membrane by the detachment of fragments from the scar of the cervix. It will be seen that this application requires great care and cannot be made without danger by an inexperienced practitioner.

B. *Amputation of the cervix* is the only means of completely removing the disease. I have already laid down the indications and contraindications for and against *amputation*¹ of the cervix. They may be resumed as follows: amputation is contra-indicated when the cervix is not the only point of localisation of the cancerous affection, even when this diathetic affection has not reached the stage of cachexia; when the cancer, however local it appears, is deeply seated not only in the body but also on the supra-vaginal portion of the cervix; when, having begun at the free extremity of the cervix, it is propagated even beyond the level of the vaginal insertions of this organ; when, the supra-vaginal portion of the cervix remaining healthy, the vagina is invaded by the cancer, even to a slight extent, except when under the form of very superficial excrescences without deep roots, easily removed by scissors without prejudice to a subsequent cauterisation, the consequences of which cannot compromise the integrity of the bladder or rectum. Amputation is indicated when the cancer is situated on the free extremity of the cervix, whatever its size may be; when no other localisations exist either in the upper portion of this organ, or in the body of the uterus, or in any other viscus; when the supra-vaginal portion corresponding to the vaginal insertions, and especially that part comprised between these insertions and the tumour, have preserved their normal size, suppleness and insensibility; lastly, when the organic alteration is not propagated in any direction on the vaginal mucous membrane: under these circumstances amputation of the cervix

¹ Amputation of the cervix was first performed in 1802 by Osiander, who repeated it 23 times (*Heilung des Mutterkrebses, &c., durch Schnitt.*, in *Reichsanzeiger*, 1803).—Langenbeck (*De totius uteri extirpatione*. Göttingen, 1842, p. 26).—Since then it has been often performed by Dupuytren (*Journ. gén. de méd.*, cix, 214), and by Lisfranc (*Gaz. méd. de Paris*, 1824, p. 387. *Clinique de la Pitié*, iii, 645. Paris, 1843), Pauly (*Maladies de l'utérus*. Paris, 1836), Simpson (*Edinb. Med. and Surg. Journ.*, 1841; *Dublin Journal*, 1846; *Medical Times*, 1859), &c.

ought to be performed, this operation being the only means of saving life.¹

I say *under these circumstances*, and I only speak of *amputating the intra-vaginal portion of the cervix*; i.e. I reject as useless or dangerous amputation of the supra-vaginal portion of the cervix and, still more so, extirpation of the whole uterus in cases of cancer. Unfortunately these operations were common enough at one period to afford materials upon which to base a serious opinion as to their advisability.²

1. When the cervix is amputated by *linear écrasement*, chloroform should first be administered. The patient should be in the lithotomy position. An assistant on each side by passing a hand or arm under the knee and seizing the instep with the other hand can hold the leg flexed, separate the thighs, raise or depress the buttocks according as the operator may require. If the uterus can be displaced easily I do not see any contraindication to drawing it down gently to a level with the vulva, which greatly facilitates the operation; if not, a curved écraseur should be used, or better still a simple iron wire in place of a chain which is passed round the pedicle of the tumour. To do this the tumour must be seized as if it were to be drawn towards the vulva. By fixing it in this manner we facilitate the application of the chain. Museux's tenaculum hook forceps may be used for the purpose or *any other form of polypus forceps* (see p. 684): the tumour is seized at various points, a little behind if possible in order to run less chance of lacerating it and to be more sure of applying the écraseur beyond the limits of the disease. Robert's tenaculum hook forceps although rather strong are sometimes better when we wish to ensure their insertion into the deep portion of the cancer towards the upper border of the tumour: their introduction is, besides, very easy; they are applied one after the other right and left of the cervix and are then articulated like forceps; they are separated more easily than Museux's forceps. Chassaignac's tenaculum hook with diverging branches may also be used; it is introduced closed into the cervical cavity; the hooks are then made to diverge and by exercising traction upon them the cervix is hooked from within and can be drawn down more easily than by the claws of forceps. Here, however, a difficulty presents itself. Whilst on the lower side we may be afraid of not reaching the limits of the cancer, on the upper side, on the contrary, there is reason to fear that a portion of the vagina may be included in the chain with the cervix, especially if, owing to the obliquity of the cervix, the greater development of the tumour on one of the lips than on the other, the traction exercised on the cervix and the movements imparted to it in order to facilitate the passage of the

¹ As to the advantages and drawbacks of this operation consult Simpson, op. cit., p. 169; West, op. cit., p. 415; Velpeau, *Médecine opératoire*, iv, 413. Paris, 1839.

² West, *Diseases of Women*, p. 412.—Serre, *Pathologie et thérapeutique des maladies pour lesquelles on a prescrit diverses amputations de la matrice; examen critique de ces moyens, et description des diverses méthodes de ces amputations*. Montpellier, 1834.—Langenbeck, op. cit.—Robert, *Des affections granuleuses ulcéreuses et carcinomateuses du col de l'utérus*. Paris, 1848.

chain, we fail to give it a direction perpendicular to the plane of section passing through all the radii of the circle described by the metallic ring of the *écraseur*. This danger is not imaginary; a real difficulty is experienced in preventing the chain, when it has been adjusted on one side to the desired portion of the cervix, from

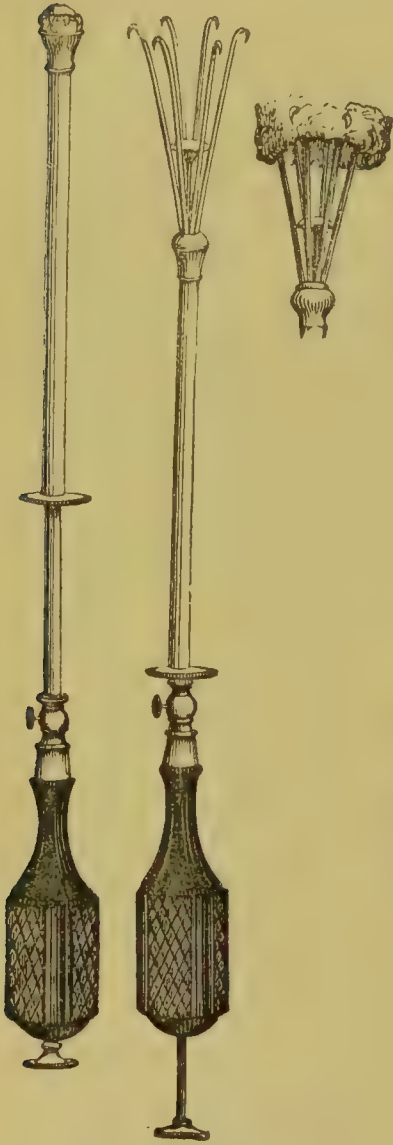


FIG. 386.—Chassaignac's diverging tenaculum hooks.

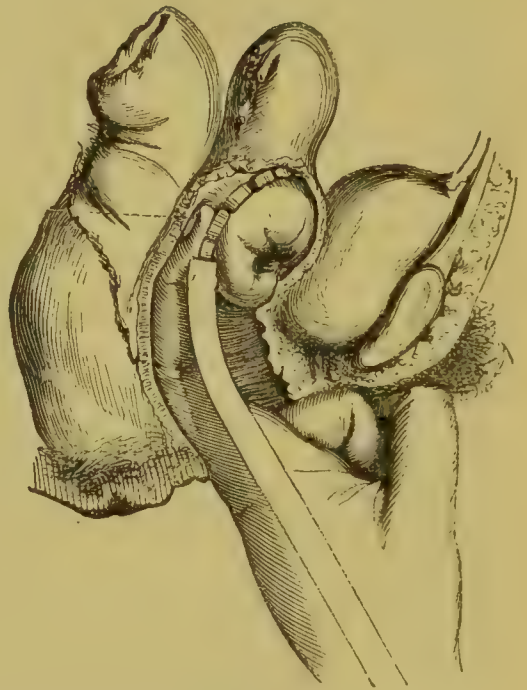


FIG. 387.—Amputation of the cervix by linear écrasement.

embracing on the other side a part of the vagina and with it a portion of the bladder or rectum or at least of the utero-vagino-rectal¹ peritoneum. A ligature of thread should be first employed as Chassaignac recommends, as a preliminary in every operation for *écraseur*.

¹ *Scanzoni's Beiträge*, iii, 80. Wurzburg, 1858.—*Monatssch. für Geburtsh.*, March, 1858.

ment; but it is not much easier to adjust this ligature in the exact situation than to fix the chain.

With the object of preventing this accident I have invented an instrument which is nothing but a pair of long disarticulating forceps, the branches of which can be introduced successively and articulated afterwards, their concave blades, which are bent at right angles, forming when united a kind of ring which embraces the cervix above the diseased part. It is easy then to grasp the organ and to make sure with the index finger that it alone is seized by the instrument, or, if otherwise, to push back the portion of the vagina which has been included, to bring the axis of the cervix once more into a position perpendicular to the circular surface of the projected section, to keep it there by tightening the blades of the forceps, and to adjust with precision around the cervix, immediately *below* the forceps, the metallic ligature or the chain of the *écraseur*, which may then be pushed back towards the blades as it is tightened, so as to avoid the double danger of dividing the cervix too high or too low.¹ As soon as we are sure of the point of application the operation proceeds by itself, its only drawback being its slowness; every two or three minutes the chain is tightened by one notch, the patient being kept under chloroform till the section is finished. Sometimes I have performed the same operation with a metallic wire and a good *serre-nœud*, effecting constriction slowly by turning the screw every quarter of an hour. I have done it in a day without having recourse to chloroform, except at the commencement of the operation which is always painful, and without causing the least hæmorrhage. The operation may be extended over a still longer period without harm if hot detersive injections are made from time to time, as is done in cases of simple application of the ulcerative ligature. Immediately after the fall of the tumour a hemostatic injection is made, and care should be taken to ascertain by digital touch that no suspicious tissue is left on the cervix, and a wooden speculum should be introduced into the vagina in order to examine the wound. If any cancerous indurations are left, they may be excised with a long narrow bistoury, perchloride of iron being afterwards applied to the womb to stop hæmorrhage, or better still a mushroom-shaped cautery or a jet of gas which has the advantage of destroying all traces of the cancer, acting as a hemostatic as well as modifying the uterine tissues and encouraging resolution of the chronic phlegmasia which has been kept up to some depth by the long duration of the development of the cancerous tumour.

2. When *excision* is performed we may dispense with chloroform on account of the rapidity of the operation; the patient should be in the same position as for *écrasement*; the cervix is seized by tenaculum forceps and is either drawn down to the vulva or operated on *in situ*.²

¹ Simon of Darmstadt, *Monatsch. für Geburtsk.*, xiii, 418 and 434.

² I do not enumerate the various methods of excision of the cervix performed by Oslander, Récamier, Dupuytren, Lisfranc and Simpson, or those invented by Hatin (*Amputation du col de la matrice*. Paris, 1827), Colombat (*Hystérotomie*. Paris, 1828), Canella (*Cenni sull' estirpazione della bocca del collo dell' utero*. Milan, 1821) and Aronsohn (*Zeitschrift für die gesammte Medicin*, i, 436).

The first method is undoubtedly the best, for by operating on the uncovered tumour if there are any adhesions with the vagina we do not run the risk of including them in the section. This danger is to be feared when the cervix is left in place, but in such cases we may apply the forceps with bent blades behind the line of projected section, immediately in front of the vaginal insertions, or we may attack the cervix from various directions, inclining it alternately in one direction or another, always to the side opposite to that by which we wish to attack it and protecting the corresponding portion of the vaginal wall with dilators. When section is begun in this way all round, it is easy by taking this first groove as a guide to finish ablation of the tumour. If it is necessary to dissect the vaginal insertion at some point or to pare the cervix into the shape of a funnel or hollow cone (which is a good precaution to take when we suspect that the cancer is propagated towards the cervical cavity) the bistoury is necessary; it is better to choose one with a long handle as being easier to manage, and with a short blade which is easily inclined in various directions and which can be carried all round the pedicle represented by the cervix. We may even require a bistoury with a very long handle and a very short blade, bent or concave like a small pruning hook when excision has to be performed at the further extremity of the vagina. If we are sure of removing all by one stroke, and without injuring any surrounding organ, we may use very strong scissors slightly curved, when the cervix is drawn down to the vulva. The same instrument with blunt points, guided by the index finger, is very useful in commencing section of the cervix at the further extremity of the vagina. It does not, like the bistoury, present the risk of cutting the cervix at other points than that to which it is applied. Whether the choice falls on a knife or scissors section of the cervix should usually be begun at the posterior lip and terminated at the anterior one, so as to begin with the most difficult section and to avoid the blood issuing from the parts already divided.

After complete separation of the cervix perchloride of iron or the actual cautery should be applied, the same precautions being used as after ablation of the cervix by the linear *écraseur*.

This operation is not so free from risk as might be supposed. Cruveilhier mentions the case of a young lady who died a few hours afterwards, therefore it should only be performed when really indicated and with all necessary precautions. Except in the rare cases in which it has been followed by death the symptoms of reaction which it produces are usually moderate. In some patients there is perfect tolerance; but in the majority symptoms of metritis are manifested. The loss of blood is not usually great; it can be arrested when necessary by perchloride of iron and plugging. Lumbar pain, however, due to the dragging exercised on the uterus during the operation, lasts for some hours and often for days. Pain is developed in the vagina and hypogastrium and is aggravated by pressure, but is rarely of an alarming character, simple emollient cataplasms, sedative fomentations, embrocations with camphorated oil sufficing to alleviate it. But

however slight the symptoms of metritis or peritonitis appear, no time should be lost in treating them by the application of a number of leeches, by frictions with mercurial and belladonna ointment made every two hours, and afterwards by mild laxatives, emollient cataplasms, and all the antiphlogistic and resolvent means applied to the treatment of acute metritis. Patients should be confined to bed till these symptoms have disappeared. We should then await the fall of the scar and pay attention to the cicatrisation of the wound. Even when cicatrisation is neither slow nor irregular, if unhealthy looking granulations appear on the surface of the wound we must not fear to destroy them quickly and completely, by the actual cautery, Vienna or arsenical paste, which may be retained against the cervix with a pledget of lint or cotton wool. I have found the latter method of great use in such cases, as it induces speedy and healthy cicatrisation. I consider it as a good supplement to the other caustics which effect mortification or destruction of a certain depth of tissue, but the scar of which does not always present the subjacent formation of a true cicatrix after its fall. Arsenical paste applied at this time has usually seemed to me to possess the property of producing real cicatrisation of the wound in place of fresh destruction. In order to profit by the advantages offered by the elastic ligature and Paquelin's thermo-cautery, I have modified the operation in the following way. Let us take the case of a voluminous tumour of vegetating epithelioma. And here I may remark that the analogy of aspect to which the English have drawn attention between the vegetating epithelioma of the cervix and the cauliflower (cauliflower excrescence) is more real than one would suppose on a superficial examination. I have always remarked in these cancerous or cancroidal cauliflower excrescences two distinct portions: 1, an exuberant friable part, formed of voluminous epithelial elements appended to vascular arborisations which support them like grapes in a cluster; these parts form lobules and lobes the removal of which is often easy, not being even accompanied by serious hæmorrhage: therefore they can always be removed more or less readily. Sometimes it is necessary to have recourse to a ligature and then they fall very easily. When I use the ligature it is to remove more of the tumour, or else because the tissue of it is different; 2, a dense resistant portion, also subdivided into tapering parts which correspond with the principal and even secondary lobes which they sustain and of which they form the trunk and principal branches. This trunk, formed of much smaller and denser epithelial elements than the preceding, of conical, oval, tapering cells and of longer or shorter fibrillæ and fibres, is hard and resistant although sometimes very vascular and penetrating more or less into the tissue from which it has arisen (the border of the lip, its external or internal surface) and in which it is inserted by a more or less broad base. It is this portion (the root of the vegetating product) which must be destroyed as deeply as possible, at first with instruments or the cautery, afterwards with caustics (arsenical paste) so as to avoid fresh vegetation of the epithelioma. In order to use all the precautions which prudence suggests, supposing the cauliflower

tumour is very large, I try to constrict the pedicle behind the vegetation by an elastic ligature. This produces ulceration of the trunk, or at least the vegetations fall rapidly, leaving bare the trunk from which they rose, which is of denser tissue.

It is this portion that must be completely removed if we would avoid a recurrence of the disease. In order to succeed with as little pain and hæmorrhage as possible we should amputate the whole cervix (if it is the whole cervix which forms the base of the tumour) by means of the galvano-caustic wire, or else excise the root of the disease

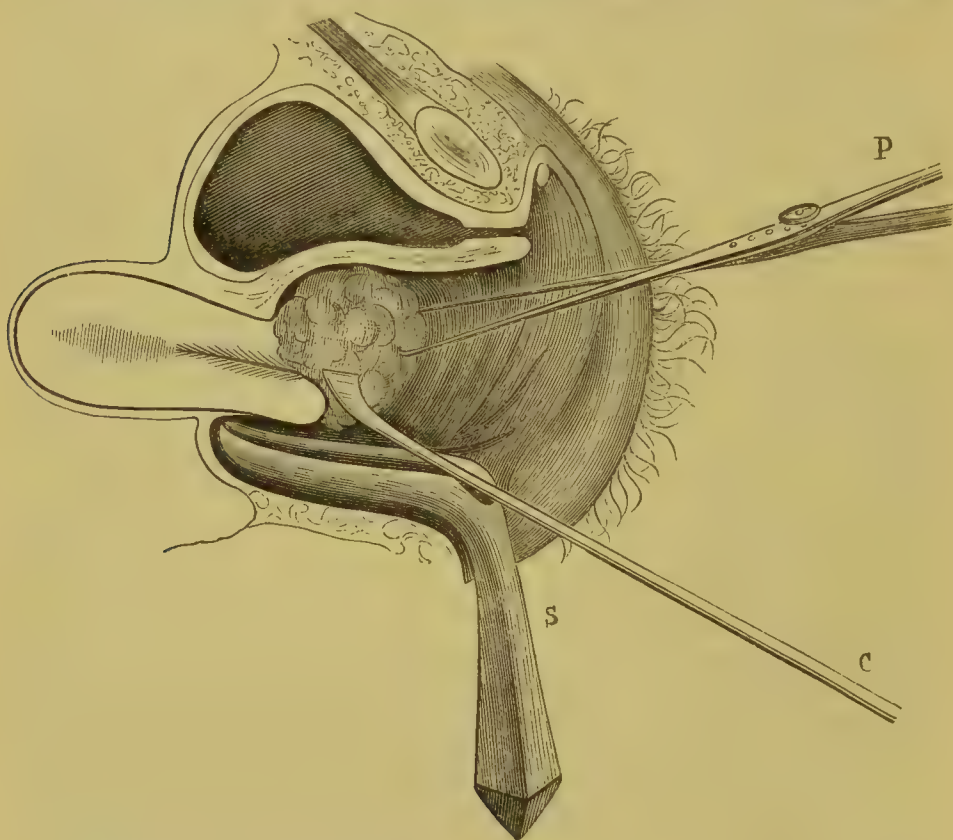


FIG. 388.—Excision of a cancerous tumour of the anterior lip of the cervix by the actual cautery. *s*, a boxwood speculum, depressing the posterior vaginal wall; *p*, tenaculum forceps seizing the tumour; *c*, cautery excising the tumour, hollowing out the tissue of the anterior lip in order to reach the extremity of its root.

(usually inserted in one of the lips) with curved sharp cauteries or with the curved knife of the thermo-cautery (Collin has made a thermo-cautery knife for me which has a curve fitting it for this little operation). The vagina is protected by means of univalve boxwood specula. The tumour is then seized by tenaculum forceps and inclined in various directions, so that its root may be separated from the healthy tissue as deeply as appears necessary by means of a cautery in the form of a straight or curved knife. The third part of the operation consists in directing the cicatrisation of the ulcer which follows excision of the root of the cauliflower, and to attain this end

no preparations seem to me so good as those of arsenic, Fowler's solution or Friar Come's powder: these should be employed with great care, for if too much is used at once poisoning may be produced.¹

Is surgical intervention impossible for *epithelioma of the uterine cavities*? Whilst admitting that it is far less effectual than in the preceding case, I do not think it should be neglected. When epithelioma is developed on the mucous membrane of the fundus, surgical intervention ought to be confined to dilatation of the cervix with sponge tents, scraping with the curette and the application of solid or liquid caustic to the abraded surfaces. When epithelioma is developed on the mucous membrane of the cavity of the cervix, especially when it assumes the form of cauliflower excrescence, we may hope to destroy it even if forced to incise one of the lips of the uterus, especially the one that is healthy and distended by the development of the diseased segment.

II. *Palliative treatment*.—1. *General palliative treatment* consists in giving tone to the organism and in subduing nervous symptoms, especially pain.—The physician ought to initiate an intelligent, energetic and continuous struggle between the lesion which attacks and the organism which defends itself. The best means for restoring the constitution and so enabling it to resist the progress of cancer as much as possible are: residence in the country, generous diet with plenty of milk and the use of the medicaments which I have indicated as suitable to the treatment of the accompanying dyspepsia: bitters, bark and iron.—The nervous symptoms and paroxysms of pain should be treated by antispasmodics or narcotics: preparations of hemlock, henbane, belladonna, Indian hemp, opium and the different salts of morphia alone or combined with ether and administered by the mouth, or subcutaneously; sedative embrocations with the oil of henbane or belladonna either alone or mixed with chloroform; laudanum in small rectal injections given with a long cannula; linseed poultices made with the infusion of poppy-heads; sitz-baths and even general baths containing decoctions of poppy-heads, henbane or hemlock leaves; suppositories containing gr. $\frac{1}{4}$ of the extract of belladonna and an equal portion of the extract of opium, which the patient may introduce into the rectum every 24 hours or oftener. Vaginal pessaries of iodoform (15 grains made with cacao butter²), &c. The poultices, sitz-baths or general baths ought to be hot or tepid.

2. *Local palliative treatment* consists in the use of resolvents, hemostatics and disinfectants. The resolvents are: mercurial and belladonna ointment or an ointment composed of equal parts of the iodide of lead and potassium applied by friction to the hypogastrium and groins. Resolvents may also be applied to the cervix in the form of plasters of hemlock and tampons saturated with strong solution of chlorate of potassium (said by Bergeron to be effectual in epi-

¹ *Traitement palliatif du cancer de l'utérus*. Communication made to the Association for the Promotion of Science in France, 27 August, 1877. *Gaz. hebdomadaire de médecine et de chirurgie*, Sept., 1877.

² Greenhalgh, Eastlake (*Obstet. Soc. of London*, 1866; *British Med. Journ.*, 1866); Demarquay (*Bulletin de Thérapeutique*, 1867); G. Wolker (id., *ibid.*).

thelioma of the lips). These local applications prepare the tissues for the direct and energetic action of other medicaments; the latter especially seems to soften the pathological tissue and facilitate its subsequent destruction.—Hemostatics are useful in preventing patients from being weakened by hemorrhage. The tincture of cinnamon, ergot and the various hemostatic waters may be given internally, or 12 gr. of tannic or gallic acid may be given every 4 hours, or rhatany, catechu, or 5 to 20 drops of perchloride of iron twice a day in a little water, followed by a cup of milk.—As for the local application of hemostatics, injections should be made with vinegar and cold water or with perchloride of iron (ziss to the quart of water) or with infusion of matico or oak-bark; or perchloride of iron may be applied undiluted after having washed the ulcer well with injections of cold water, taking care to remove all that remains of the perchloride with a little cotton wool.¹ Indirect means of hemostasis should also be employed, such as semi-flexion in a horizontal posture, very hot injections morning and evening, absolute rest during menstruation, moderate exercise in the intercalary period, the interruption of marital intercourse, milk diet, &c.

The daily use of disinfectants is indispensable. In addition to baths vaginal injections should be prescribed morning and evening, in order to expel the ichor of the cancerous surfaces as well as the decomposed *débris*.—Sedative injections have very little effect owing to the very slight absorbing power of the vagina; this defect, however, is compensated for by the facility of applying narcotics to the rectum, and the same remark applies to medicated pessaries. The only injections that are of any use are those that are disinfectant and deterrent; they should be made with very hot water, to which is added a spoonful of the solution of permanganate of iron or potassium (1 per cent.) or carbolic acid. Some patients find aromatic injections useful. After the injection the diseased surface may be touched with one of the following medicaments: creasote, chromic, boracic or carbolic acid, perchloride of iron, solution of tannin, concentrated solution of nitrate of silver (10 per cent.) or Fowler's solution. They have the effect of preventing the exudation of blood, of coagulating lymph and albumen and contracting the tissues; in fact of tanning the surface of the tumour to a considerable extent, as they can be applied with a brush to the interstices and infractuositities of the cancerous excrescence; the result is a superficial desiccation of the tumour or ulcer, and sometimes the course of the organic alteration is arrested. I have found these local applications of great use associated with other local and general means; they make the cancer tolerable till the period of cachexia arrives; in fact this treatment may prolong life when the cancer has not a very progressive tendency and when the corroding ulcer is not very extensive.

I will end this chapter by a few words on the course to be pursued during gestation or labour. If we have reason to hope that the life of

¹ Sims's speculum should be used, the patient being in the elbow and knee position, which is the most convenient for dressings in cancerous diseases.

the patient may be prolonged, whilst the disease is such as to render delivery dangerous, we may produce abortion or premature delivery ; if not we should wait. If labour has commenced we should wait till expulsive efforts have become ineffectual ; if after a certain time no part of the orifice nor inferior segment is sufficiently dilated to allow of the passage of the child, deep incisions into the cervix and cervical canal are indicated, and in desperate cases Cæsarean section may be necessitated (West, op. cit., p. 410).

CHAPTER V

DISEASES OF THE UTERINE APPENDAGES—PELVIC HÆMORRHAGES AND PERI-UTERINE HEMATOCELE—CYST OF THE OVARY AND GENITO-PELVIC TUMOUR—STERILITY

THE number of diseases which remain to be described is reduced to three: 1, pelvic hæmorrhages and hematocele which is often the consequence of them; 2, tumours of the ovaries and tubes, especially ovarian cysts, in the description of which I have included not only ovariectomy but hysterectomy; 3, sterility, the incurable causes of which must not be confounded with those residing in the vagina or uterus, which are more accessible to investigation and less difficult to treat.

PELVIC HÆMORRHAGES AND PERI-UTERINE HEMATOCELE

1. *Pelvic Hæmorrhages*

Hæmorrhages which occur in the cavity of the pelvis may arise from different sources; for the cavity contains, besides very vascular organs, important arterial and venous vessels.

We shall confine our study to those which, having their starting-point in the uterine system in the state of vacuity, are capable of forming a tumour and of being produced under the three following conditions: absence of pregnancy, starting-point in the uterine system, sufficient quantity. With regard to the theories which have been expressed as to the origin of the extravasated blood, I shall make the following remarks:

1. The theory of Nélaton and Laugier (menstrual hæmorrhage of the Graafian follicle and morbid vesicular hæmorrhage¹), has no foundation from a physiological point of view, since a Graafian vesicle may be ruptured without any discharge of blood, and morbid vesicular hæmorrhage gives rise to passive effusions which are easily absorbed on the spot.²

¹ The exaggerated natural hæmorrhage of the Graafian vesicle may occur at the moment of dehiscence (Nélaton), or at repeated dehiscences (Laugier), or from the passive exudation which precedes or accompanies the formation in the vesicle of the *corpus luteum*. Morbid or pathological hæmorrhage of the ovary is produced either in the vesicle or in the parenchyma (in the latter case it is called apoplectic, from its analogy with the hæmorrhage which causes apoplexy).

² Robert, *Gaz. méd. de Paris*, 1857, p. 1.—Puech, *De l'hématocèle péri-utérine*. Paris, 1861, p. 9.

2. The theory developed by Gallard,¹ who considers hematocele an extra-uterine deliſcence, an extra-uterine pregnancy without the product of conception, has by no means been proved. Where is the proof that the ovule determines hæmorrhage on falling into the serous membrane? As to hæmorrhage due to extra-uterine pregnancy, it is possible though rare, the principal fact in such a case being the extra-uterine pregnancy itself, that is, Huguier's pseudo-hematocele.

3. Other writers, including Beau and Tardieu, think there is a sanguineous exudation from the serous membrane of the pelvis; Ferber² has adopted this hypothesis, urging that some autopsies have revealed hyperæmia and capillary vessels of new formation, and that it is nothing less than hæmorrhagic pelvic peritonitis (Virchow).

4. We have still another hypothesis to examine, that put forth by Bernutz in 1848 and again in 1860; he admits that the lumen of the cervico-uterine canal may be closed by an obstacle depending on the contractility of the uterus and that the blood may accumulate in the cavity of the body, after having dilated which it enters the Fallopian tubes and passes into the peritoneum. There is no doubt that the blood may follow this course when there is any obstacle, whether congenital or acquired, in the vulvo-uterine canal; but it has not been proved that it may occur when there is none. If, on the one hand, the narrowness of the *ostia uterina*, their slight permeability and the relatively large size of the cervico-uterine canal, are anatomical arguments which should not be forgotten, on the other hand we have no right to avail ourselves in the argument of what occurs in cases of atresia of the genital canal, that is to say in the conditions most favorable to the *reflex theory*, as Aran calls it; Puech³ has proved that the fact is excessively rare; it only occurred 16 times out of 310 cases, and it never occurred suddenly; excruciating suffering was endured by the patients for several years before the blood invaded the peritoneal cavity.⁴ Therefore pelvic hæmorrhages can only have their source in the Fallopian tube, ovary, utero-ovarian plexus, and in hæmorrhagiparous pachy-peritonitis.

I. *Hæmorrhage from the Fallopian tube*.—Indicated by Tilt in 1850 and by Fenerly in 1855, tubal hæmorrhage has only taken its place in science with the works of Puech. A sufficient number of cases are recorded to prove that the Fallopian tube is far from possessing immunity in this respect; but in all these cases we may recognise as a preliminary condition sanguineous congestion of the tube, and although we know that the exanthemata, such as measles, small-pox, and scarlet fever, encourage hæmorrhages, as in the cases seen by Laboulbène,⁵ Hélié,⁶ Scanzoni⁷ and Puech, we are inclined to

¹ *Gaz. hebdom.*, 1858, p. 481, *Archives de Médecine*, 1860.

² *Archiv. der Heilkunde*, 1862, 8th year, part 5.

³ *Des atrésies des voies génitales*. Paris, 1863, p. 61.

⁴ See p. 279, chapter on *Retention of the Menses*.

⁵ *Gaz. méd. de Paris*, 1853, p. 78.

⁶ *Journal de médecine de la Loire-Inférieure*, 1858, p. 30.

⁷ *Op. cit.*, p. 363.

admit that there is always acute fluxion or congestion. At other times, on the contrary, we find in the previous history symptoms of chronic sanguineous congestion, Bernutz's first case being a typical example.¹

Whatever be the cause which has produced it, the hæmorrhage may make its way either by the *ostia uterina*, by the abdominal opening, or by rupture of the organ. The discharges of blood from these different points are sometimes simultaneous and sometimes isolated; if they escape notice when the fluid is discharged by the first exit, it is otherwise when the blood escapes by the latter channels. The patient suffers pain in the lumbo-sacral region, and has colics succeeded by syncope and a feeling of weakness. Sometimes these with paleness of the face are the only symptoms, at other times, when the hæmorrhage endangers life, the pains are more violent, and there is vomiting, hiccough, buzzing in the ears, abdominal distension and cold sweats, soon followed by death. When on the contrary the hæmorrhage is not great enough to cause this result, as seen by Föllin,² Oulmont,³ Seuvre,⁴ and others, a peri-uterine sanguineous tumour is formed.

II. *Ovarian hæmorrhage*.—These hæmorrhages are frequently described.⁵ Here also a marked alteration of the ovaries exists previous to any hæmorrhage; apart from a case mentioned by Neuman, of Berlin,⁶ in which hydatids were found, acute inflammation and chronic congestion are the lesions which have been more specially noticed. In acute inflammation the size of the organ is increased, the colour is violet, and on section the blood gushes out, the cut surface showing considerable hyperæmia. In this state the tissues can neither resist nor be distended; they are easily ruptured, as remarked by Denonvilliers⁷ and Demarquay.⁸ Chronic congestion is, I believe, the most active cause of these hæmorrhages. The ovary is increased in size, its outline is normal, but the stroma is hyperæmiated, presenting slight effusions of blood. As a rule this state is only manifested externally by excessive menstruation; at other times there is a sensation of weight and burning heat in the pelvis, draggings in the kidneys and groins, and colics, which are sometimes very acute, before menstruation. Menstruation, besides being too abundant, is prolonged more and more, leaving each time a marked aggravation of the congestive phenomena. In this state accidents are imminent, and menstruation is sometimes sufficient to produce hæmorrhage; but it does not follow that there is a relation of cause and effect between

¹ *Nouveau Diction. de méd. et de chirurg. pratiques*, article HÉMATOCÈLE UTÉRINE, t. xvii, p. 310, fig. 29. In this figure a clot is seen emerging from the Fallopian tube.

² *Gaz. des hôpitaux*, 1855, p. 403.

³ *Union médicale*, 1858, p. 530.

⁴ *Progrès médical*, 1874, pp. 815, 224.

⁵ *Nouveau Diction. de méd. et de chirurg. pratiques*, article HÉMATOCÈLE UTÉRINE.

⁶ *Bibliothèque médicale de Royer-Collard*, t. lxxviii, p. 113.

⁷ *Gaz. méd.*, 1856, p. 76.

⁸ *Gaz. des hôpitaux*, 1862, p. 21.

the peri-uterine hæmatocele which may be developed afterwards and menstruation; disorders of this function are only the index of the concomitant state of the uterine system. At other times the symptoms are those of acute sanguineous congestion, apoplectic hæmorrhage occurring in the midst of apparently perfect health; only in such cases fluxion is more active and the afflux of blood more considerable.

Whether the ovary is healthy or otherwise the hæmorrhage may be intra-ovarian only, or both intra and extra-ovarian; whilst in the interesting case published by Puech intra-ovarian hæmorrhage was followed, four months afterwards, by fresh congestion, which on this occasion ruptured the membrane, causing death by peritonitis. If symptoms of intra-ovarian hæmorrhage often escape notice, or at least are misinterpreted, it is very different when hæmorrhage occurs in the pelvis; in such cases we either see the signs of internal hæmorrhage which soon ends fatally, or the physical signs which characterise sanguineous tumours of the pelvis.

III. *Hæmorrhage from the utero-ovarian plexus*.—Although analogy would seem to indicate the possibility of rupture of the utero-ovarian plexus, this source of hæmorrhage has been slow in taking the place to which it is entitled. In vain two cases of it were published in 1852 and 1854, even in 1857 it was in vain that Richet brought forward a new argument in support of the fact,¹ attention was directed elsewhere, and it was only in 1858, in the works of Puech² and Devalz,³ that these venous lesions obtained the rank that they deserve as causes of pelvic hæmorrhage. This rupture may be followed by extravasation of blood under the peritoneum, and between the folds of the broad ligament (Raciborski), by a simple intra-pelvic thrombus or by a more considerable hæmorrhage and a more or less abundant sanguineous effusion into the pelvis. It affects the pampiniform plexus whether varicose or not. Doubtless the nodosities presented at intervals by the varicose veins and the attenuation of their walls favour this accident; but unfortunately these conditions are not indispensable for its production; severe exercise, or external violence, sexual excitement, or great menstrual fluxion, or the concurrence of these two last circumstances may cause the malady. The hæmorrhage which occurs is more or less violent; in twelve cases it caused death rapidly;⁴ in others, amongst which Saexinger's case may be included,⁵ it was followed by the formation of a peri-uterine hæmatocele.⁶

IV. *Hæmorrhages from hæmorrhagiparous pachy-peritonitis*.—Besnier has tried to furnish additional proofs of this theory in a long

¹ *Anat. méd.-chirurg.*, 1857, p. 735.

² *Op. cit.*, pp. 80—100.

³ *Du varicocèle ovarien*. Paris, 1858.

⁴ In the case recorded by Maschka death was caused by the rupture of a varicose vein attached to the fundus of the uterus (*Wiener Medicinische Wochenschrift*, 1860, No. 102).

⁵ *Monatschrift für Geburtsk.*, 1864, Bd. xxiii, S. 476.

⁶ Of the four sources of hæmatocele, this and the following may coincide with regularity of the menstrual function.

paper published in 1877 in the *Annales de Gynécologie*, the conclusions of which are :

“1. Amongst intra-peritoneal hematoceles there is one which commences with primary or secondary pelvic peritonitis, either menstrual or inter-menstrual, which is benignant or moderate on its appearance, and increases progressively or by fits. In this form of hematocele, which is very different from those which commence suddenly and violently and end fatally, the tumour, which is but a pathognomonic sign of the affection, is only verified *at a late period* relatively to the commencement of the symptoms, and as a rule the termination is favorable. 2. The cases included in this group cannot be regarded as hematoceles connected with dehiscence or extra-uterine pregnancy, nor with an ovarian lesion, nor with a sanguineous reflux by the tubes, nor with rupture of the tubo-ovarian veins, &c. ; they ought to be considered as hematoceles due to pelvic neo-membranes. Taken as a whole these maladies are therefore cases of peritonitis which have become hæmorrhagic accidentally or secondarily, otherwise called *hæmorrhagic pachy-peritonitis*. 3. From a clinical point of view, these cases being the most numerous of all, as we may say they are the only hematoceles which end in cure, it follows that ordinary intra-peritoneal hematocele terminating favorably is, in most if not in all cases, a hæmorrhagic pachy-peritonitis, either menstrual or inter-menstrual, usually the former, that is to say, having commenced at a menstrual period.”

I do not deny the possibility of hæmorrhagiparous pachy-peritonitis. I admit this new source of hematocele by analogy with neo-membranes developed on other serous membranes (meningeal, vaginal, synovial, &c.) and giving rise to loss of blood ; but I am far from regarding it as the most frequent, as this would imply in all cases the existence of previous peritonitis, slowness of the sanguineous effusion and a number of other circumstances totally opposed to most of the symptoms on which we found the diagnosis of hematocele. Besnier's case moreover does not seem absolutely decisive ; no autopsy, abortion preceding the hematocele, rapidity in the invasion of the attack and in the symptomatic manifestation, in short, nothing justifying the asserted slowness of invasion and symptomatic obscurity of the commencement. My own conclusion is that, of the various sources of sanguineous effusion which can account for the formation of peri-uterine hematocele, four only may be considered as proved by autopsy. These are, in order of frequency : apoplectic hæmorrhage from the ovaries, hæmorrhagic pachy-peritonitis, rupture of one of the vessels composing the utero-ovarian plexus and tubal hæmorrhage. These hæmorrhages terminate either fatally, or by absorption of the extravasated blood, or by the formation of a sanguineous tumour (hematocele, hematoma). In the latter case the hæmorrhage is the cause, the hematocele the effect ; but the effect becomes in its turn a malady, having its symptoms, its course, its termination, its indications.

2. *Peri-Uterine Hematocele*

*Hematocele*¹ is an encysted tumour developed round the uterus and formed of blood proceeding from the lesion of one or two of the appendages, or from a cyst of extra-uterine pregnancy, from a rupture of the utero-ovarian plexus, or from the peritoneum itself, more frequently from a chronic inflammation of this serous membrane with thickening and vascular hypertrophy.

The various sources of hæmorrhage explain the seat of the effusion, and the frequency of this seat in any particular spot is the consequence of the frequency of the hæmorrhage at that point. Therefore whether the hæmorrhage come from the ovary, from the Fallopian tube, from



FIG. 389.—Typical retro-uterine hematocele (intra-peritoneal) caused by rupture of a diseased ovary. A, hematocele; U, uterus pushed forward; R, rectum compressed behind (St. Thomas's Museum, Barnes).

an extra-uterine pregnancy or from pachy-peritonitis, the sanguineous effusion must take place into the peritoneal cavity (which is the most common case), preferably behind the uterus, where the serous membrane is most developed; the ovaries are also to be found there and the Fallopian tubes always directed backwards and never forwards (on this account hematocele is more frequently retro-uterine than peri-uterine). This rule is so general that ante-uterine hematocele is considered as being only secondary, formed only as a consequence of the peri-uterine or retro-uterine hematocele which has preceded it, the continuation of which has become impossible owing to adhesions and fibrous bands

¹ Poncet of Lyons, *De l'hématocèle péri-utérine*. Thèse d'agrégation. Paris, 1878.

uniting the uterus to the rectum and sacrum so as to prevent the continuation of any sanguineous effusion into Douglas's space. Such is the case published by Schröder in *Wiener Medicin. Wochenschrift*, 1873; and in *Archiv für Gyn.*, 1873.

If the hæmorrhage come from the tubo-ovarian plexus the hematocele may be limited to a thrombus of the broad ligament or be insinuated under the peritoneum covering the uterus, in the peri-uterine cellular tissue, not only behind and in the broad ligament of the other side, but also in front under the peritoneal fold which covers the anterior wall of the uterus and bladder. These sanguineous effusions

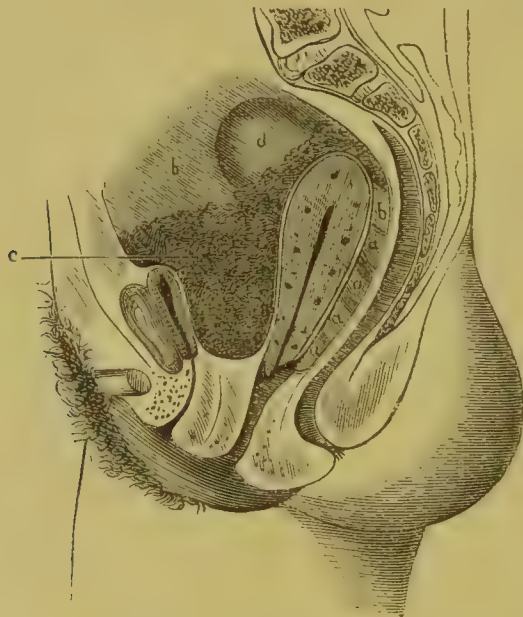


FIG. 390.—Lateral and ante-uterine hematocele (intra-peritoneal), due to utero-rectal adhesions in Douglas's space, where the hematocele, which at first was retro-uterine, was first produced. *a a a a*, solid blood and adhesions; *b b*, fluid blood; *d*, extra-uterine tubal pregnancy, cause of the hematocele; from Schröder (*Archiv. für Gyn.*, Bd. v, S. 357. Berlin, 1873).

into the broad ligament and peri-uterine connective tissue have been well named *peri-uterine hematoma* by Kuhn (Thèse de Zurich, 1874), a name which distinguishes this sanguineous tumour from *hematocele* which is in the peritoneum and from *hematometria* which is in the uterus, a name very preferable to that of extra-peritoneal or vaginal hematocele, by which it was formerly designated. The blood is gradually absorbed and the most frequent termination is in cure. The prognosis, however, is more unfavorable than in the case of hematocele, for this reason, that the opening of the tumour into the peritoneum is very dangerous, usually causing death. I copy a figure (from Emmet) of a very rare case of such a hematocele or hematoma formed in the right broad ligament and in front of the bladder, which caused death by its rupture into the peritoneum (Fig. 392).

Whatever be the source of the hæmorrhage and wherever the blood may be effused it is not long before it undergoes certain modifications

producing around it an interesting pathological process. The blood, which at first is liquid, soon coagulates into more or less voluminous resistant clots, the presence of which irritates the serous membrane with which it is usually in contact; false membranes are produced; some which are filamentous pass above the sanguineous mass, others resembling bands of cellular tissue divide the collection by forming partitions through it. At other times there are no fibrous adhesions but a kind of membranous covering, which, spreading like a sheet, seems to form a continuation of the peritoneum and has frequently been taken for it. In other cases this is absent and the intestinal loops, united and glued together, constitute the upper wall of the cyst. When the adhesions are detached we penetrate into a winding sac sometimes containing from 7 to 77 ounces of a wine-coloured viscous fluid holding dark clots in suspension, or when the malady is of longer standing a yellowish or more or less discoloured fibrinous mass. The bladder, rectum and upper extremity of the vagina are compressed; when there has been suppuration and evacuation of pus the walls of the rectum or vagina are perforated, either simultaneously or singly. The uterus, dragged down by adhesions and inclined to the right or left, has in some cases effected rotation on its axis, in others it is

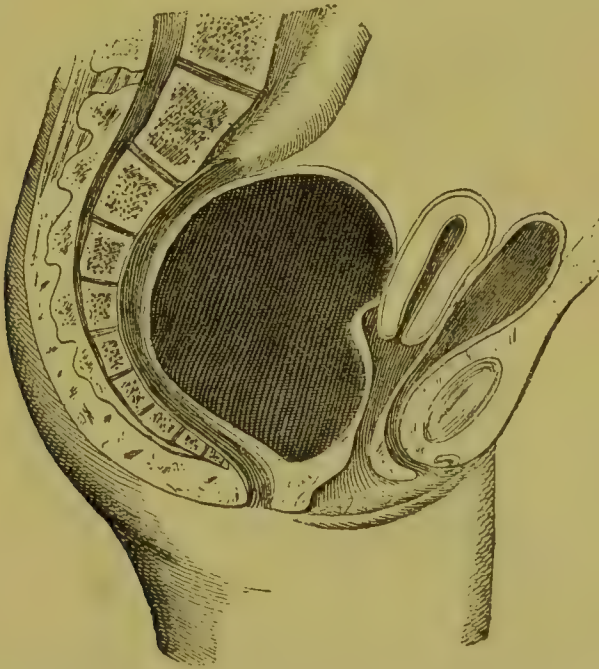


FIG. 391.—Sub-peritoneal latero and retro-uterine hematoma or hematocele (extra-peritoneal) formed in the broad ligament. The posterior vaginal wall was still more pushed forward (after Emmet).

inclined forwards or backwards without being fixed in its position. As it usually shares in the congestion of which the annexes are the seat, it is more frequently increased in size; its walls may be softened and infiltrated with blood, the cavity containing either mucous or sanguineous clots. The annexes are more or less changed: if there are cases in which we can discover the source of the hæmorrhage, there are others in which

we can only guess at it. Thus the ovaries, or at least one of them, may be reduced to a shell; at other times they are hypertrophied and hollowed out into a cavity communicating with the principal centre. In other cases or even simultaneously the tubes have their fimbriated extremity and canal partly obliterated; or else they are diseased, containing decomposed blood or presenting a dilatation which constitutes a part of the centre of the tumour.

Besides these lesions we find others dependent on the generalised peritonitis or on purulent infection. In the former case the abdominal viscera bear the more or less marked impress of inflammation. The intestines are shortened sometimes to half their length, whilst some circumvolutions are drawn together and united by false membranes. Sometimes the abdominal cavity is distended by a yellowish serum or by a milky fluid mixed with albuminous flakes; sometimes there is hardly any effusion, but the roughened serous membrane presents patches of a blackish hue; lastly, if the cyst has been perforated and the contents have escaped we may find a portion of this fluid poured out into the peritoneal cavity. As to purulent infection it leaves behind it well-known lesions on which it is needless here to dwell.

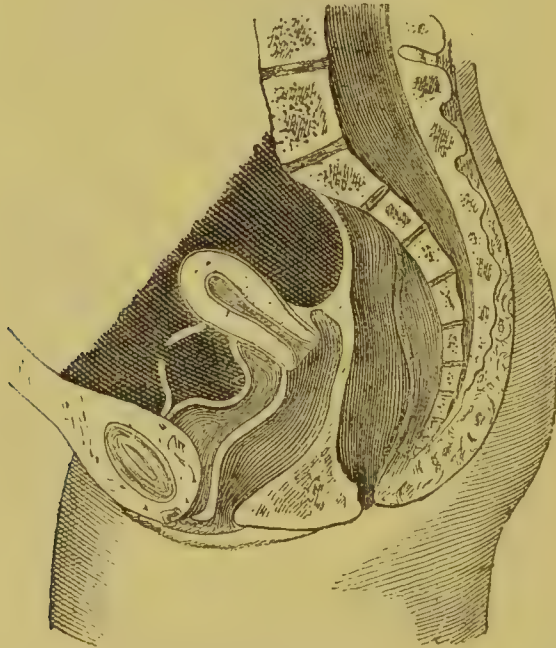


FIG. 392.—Sub-peritoneal ante-uterine hematoma or hematocele (very rare) opened by laceration or ulceration into the peritoneum, where the blood has been effused and has formed an intra-peritoneal peri-uterine hematocele which was the cause of death (after Emmet).

Diagnosis—subjective signs.—Peri-uterine hematocele being a hæmorrhage followed by peritonitis we should find in its first stage the characteristic symptoms of *internal hæmorrhage*: they exist in fact; but as they are obscure they generally escape observation. The period which follows and of which the features are borrowed from *peritonitis*,

is more marked, although it does not offer any very striking symptoms : hence the possibility of committing errors of diagnosis. Pain is the first phenomenon which shows itself : it is constant, but it varies greatly in intensity. It is sometimes manifested under the form of intestinal colics, sometimes under that of expulsive pains. It is often remittent, but is aggravated by the least pressure or by the slightest movement. Disorders of the digestive economy are intimately connected with these pains : when the latter are intense there is nausea and vomiting ;¹ if they are moderate there is frequently want of appetite. Thirst is generally great, the abdomen is more or less distended, and there is usually obstinate constipation, anal and sometimes also vesical tenesmus, and even retention of urine. When the tumour compresses the crural and sciatic nerves radiating pains and numbness are observed in the lower limbs. Œdema has also been seen in addition to the preceding symptoms, affecting either the side corresponding to the largest portion of the pelvic tumour or the opposite one ; in the former case it would be due to impeded venous circulation, in the second to phlebitis of the corresponding veins.

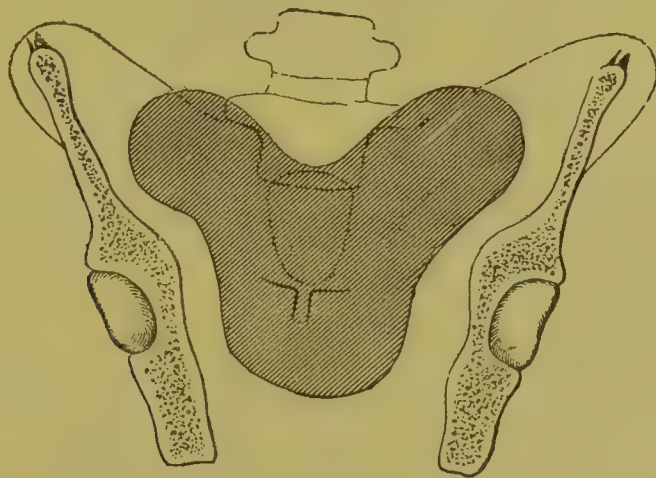


FIG. 393.—Peri-uterine hematocoele spreading uniformly round the uterus, which has hardly undergone any displacement. Owen's case, University College Hospital, 1866. Front view (after Graily Hewitt).

Objective signs.—The seat of pain and the distension of the belly attract the attention of the physician to the hypogastric region and enable him to verify the existence of a *peri-uterine tumour*. Sometimes it is diagnosed immediately on account of the projection and the size which it presents ; at other times it is only discovered after careful palpation. Two tumours are then found in the pelvic cavity : the anterior one is the uterus, the other, posterior and more or less lateral, is the morbid tumour, the hematocoele. The size of the latter varies from that of an apple to a child's head. It is usually confined to the pelvis, but may rise above the brim towards the umbilicus ; I do not think, however, that it ever rises beyond the navel : observers who have mentioned such cases have

¹ There may even be symptoms of internal strangulation as Hergott has remarked ; they seem caused by an anomaly of the sigmoid flexure (*Mém. Soc. mét. Strasbourg*, 1872, p. 149).

forgotten to take into account the inflammatory zone, which has led them into error. As to the consistency of the tumour, it may be



FIG. 394.—Intra-peritoneal peri-uterine hematocoele, seen in profile, spread uniformly round and above the uterus, which has not been displaced at all (after Emmet).

fluid and fluctuating; but unless it suppurates it becomes solid, hard and immobile. Diagnosed in the abdomen by hypogastric palpation, in the pelvis the tumour is defined by vaginal touch; it is found behind and at the sides of the uterus; in three cases it extended in front of this organ; in a case published by Chassaignac¹ it was situated entirely between the bladder and uterus. Usually it pushes down the posterior *cul-de-sac*, contracting the vagina. Rectal examination reveals the compression which it exercises on the intestine, making it difficult for the finger to penetrate the canal. The uterus is pushed forwards and upwards against the pubis, the neck under the pubic arch, sometimes in the median line, sometimes a little to the right or left: it is fixed in this position. Left to itself the tumour at first remains stationary; but sometimes it presents alternations of tension and relaxation which depend chiefly on the increase or diminution of the inflammatory phenomena. This increase lasts for some days; then the tumour diminishes in size and gradually enters the pelvic cavity, where it remains finally concealed. From being soft and puffy at the commencement the hematocoele becomes as hard as wood; it contracts from the circumference to the centre more or less rapidly according to the case. Occasionally numerous inflammatory accidents are developed, sometimes in the neighbouring peritoneum, sometimes in the

¹ *Traité de la suppuration*, t. ii, p. 463.

tumour itself; febrile symptoms and slight shivering in the evening indicating that suppuration is going on in the cyst. The clots of

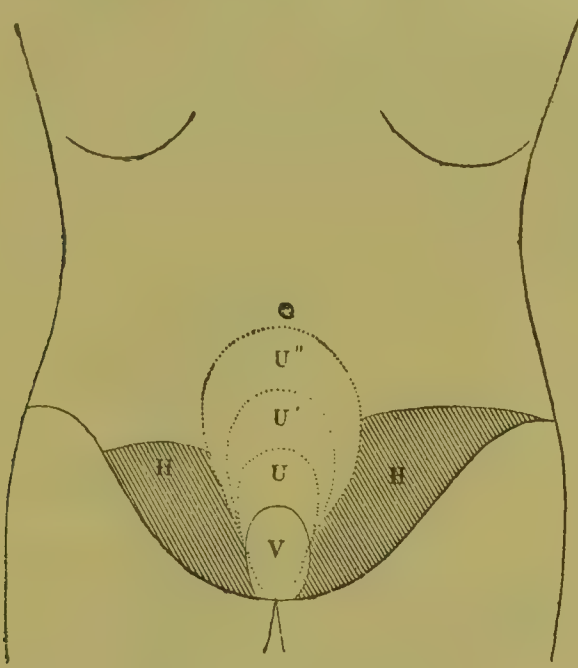


FIG. 395.—Intra-peritoneal retro-uterine hematocoele H, which has pushed the uterus upwards, v u u' u'', and forwards (after Barnes).

blood become softened and disintegrated and assume a black and afterwards a greyish hue; pus is formed and tends to be evacuated; once pro-

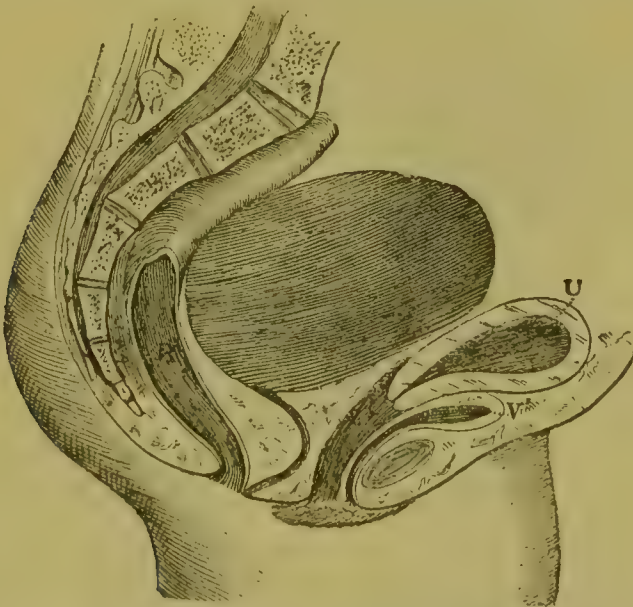


FIG. 396.—Intra-peritoneal retro-uterine hematocoele, extending to the base of the pelvic cavity from Douglas's pouch, pushing the uterus u upwards and forwards, flattening the cervix against the pubis, and compressing the bladder v', seen in profile (after Barnes).

duced, this fluid either pierces the cyst on the side of the serous mem-

brane and sets up peritonitis which soon ends fatally ; or else making its way towards the cellular tissue it succeeds in emptying itself more or less completely either by the vagina or by the rectum.

Although evacuation of the contents of the tumour into the peritoneum always ends fatally it is quite otherwise with the other two modes of exit. They are both favorable, although less so than resolution of the tumour : they are usually attended by diminution in the size of the tumour and by marked alleviation ; they are accompanied by a discharge somewhat like treacle or sepia ink, which may cease in two days, but which usually persists from ten days to a fortnight. The escape of blood and pus by the vagina has almost always been followed by cure.¹ When the tumour, on the contrary, opens into the rectum the little wound may remain fistulous, and the intestinal gases may penetrate into the interior of the mass, causing hectic fever and a kind of putrid infection. To sum up, out of 52 cases in which the tumour was left to itself absorption occurred 26 times, evacuation of the contents into the peritoneum 6 times, by the rectum 13 times and by the vagina 7 times.

Differential diagnosis.—The diagnosis of peri-uterine hematocoele is easy from the beginning : the rapid appearance of the tumour, the concomitant symptoms, of which the most marked are those of peritonitis, the displacement of the pelvic organs, the cervix being squeezed under the pubis and the uterus pushed forwards, the flattening of the rectum and the consistency of the tumour are all data upon

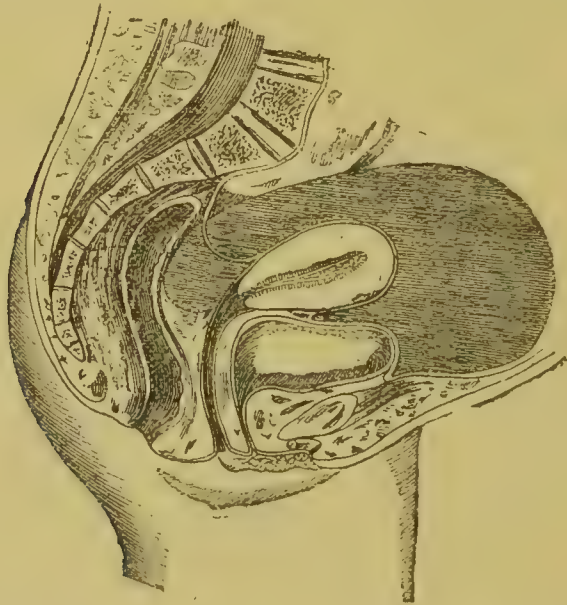


FIG. 397.—Pelvic peritonitis and pelvic abscess, seen in profile, recognised through the vagina (after Graily Hewitt).

which to form a certain diagnosis. It is not, however, always so : time may have modified the symptoms, rendering them less marked, so

¹ Ott (*Dissert. de Tübingen*, 1864) has seen a case of death from septicæmia under these conditions.

that the ablest physicians have sometimes been deceived and have mistaken hœmatocele for perimetritis, extra-uterine pregnancy, a cyst or some other tumour of the ovary or tube, a fibroid tumour, retro-flexion, &c. Peri-uterine inflammation is one of the diseases as to which we may be easily mistaken : but apart from the symptoms common to the two diseases there are radical differences : at the beginning the low temperature ($37\cdot5^{\circ}$) distinguishes hœmatocele from *pelvic cellulitis* ($38\cdot1^{\circ}$) and from parenchymatous metritis ($39\cdot5^{\circ}$);¹ pelvic abscess is almost always connected with delivery or abortion, whilst hœmatocele is very rarely the result of these, being rather connected with men-



FIG. 398.—Circumscribed and encysted pelvic cellulitis. Outline of the pelvic abscess (phlegmon of the broad ligament) to the right of the uterus. Case in University College Hospital, seen in profile (after Graily Hewitt).

strual disorders ; the former is developed slowly, the latter suddenly, reaching its maximum of development in a few hours ; when digital touch is practised the one gives the sensation of a kind of hard puffiness which is never fluctuating or is only so towards the end, the other is only fluctuating at the commencement, and becomes hard as the effusion is absorbed ; in fact the abscess seems to make one mass with the uterus, never producing displacements analogous to those caused by sanguineous effusion, which is distinct from the womb, the latter being pushed more or less out of place ; it never acquires so large a size, and is comparatively long in being cured.

In *adhesive suppurative pelvic peritonitis* the distinction is still more difficult. Pelvic peritonitis often extends all round the uterus, the annexes and pelvis, like peri-uterine hœmatocele ; but usually it does not descend so low and often rises higher, above the brim ; like hœmatocele, it fixes the uterus, but as it extends more equally round this

¹ Armelli, *Movimento med. chirurg. de Naples* (*Annales de Gynécologie*, ix, 159).

organ it displaces it less frequently and less considerably. When the malady is of long standing and its development has not been followed, the difficulties of diagnosis are still greater, and can only be overcome by analysing the antecedent history carefully. Extra-uterine pregnancy is developed slowly and often without any appreciable functional reaction, whilst usually hæmatocele begins suddenly, reaching its maximum of development all at once. But the diagnosis is difficult when rupture of the foetal cyst has caused hæmorrhage and produced a tumour analogous to hæmatocele: in such a case as a rule the

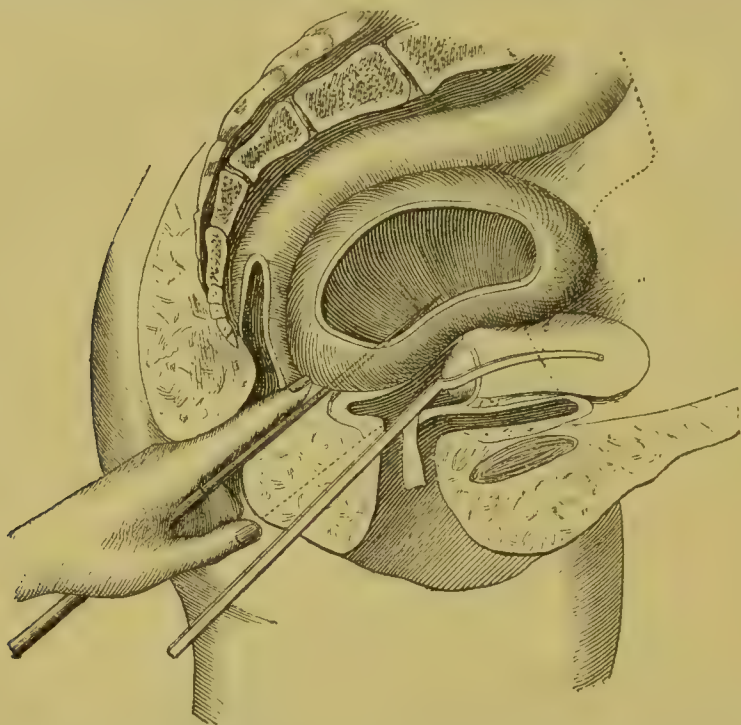


FIG. 399.—Extra-uterine pregnancy, mistaken at first for retroflexion of a gravid uterus, diagnosed only by means of the sound. Cervix directed downwards and backwards, the reverse of retroversion and flexion. Puncture of the cyst, vaginal and rectal opening. Expulsion of small bones, contraction of the cyst. Cure (*Annales de Gynécologie*, after Barnes).

diagnosis is posthumous, unless spontaneous opening of the tumour and expulsion of foetal fragments put the practitioner on the right track.

Retroversion and *retroflexion* of the uterus, especially in the third month of pregnancy, may be mistaken for hæmatocele, as mentioned by Jourel,¹ Fenerly² and Mikschik.³ Puech has recently seen a case which had been mistaken first for imminent miscarriage and afterwards for retroversion of the uterus; the escape by the vagina of a brownish fluid proved that he had been right in diagnosing peri-uterine hema-

¹ *Bulletin de la Faculté de médecine de Paris*, 1812, No. 8.

² *Op. cit.*, p. 40.

³ *De la pathol. des ovaires*. Leipsic, 1856, in *Constat's Jahresbericht*, 1856, p. 425.

tocele. Stoltz¹ has published a case in which he made the mistake of diagnosing an extra-uterine *fibroid tumour*. In other cases it has been

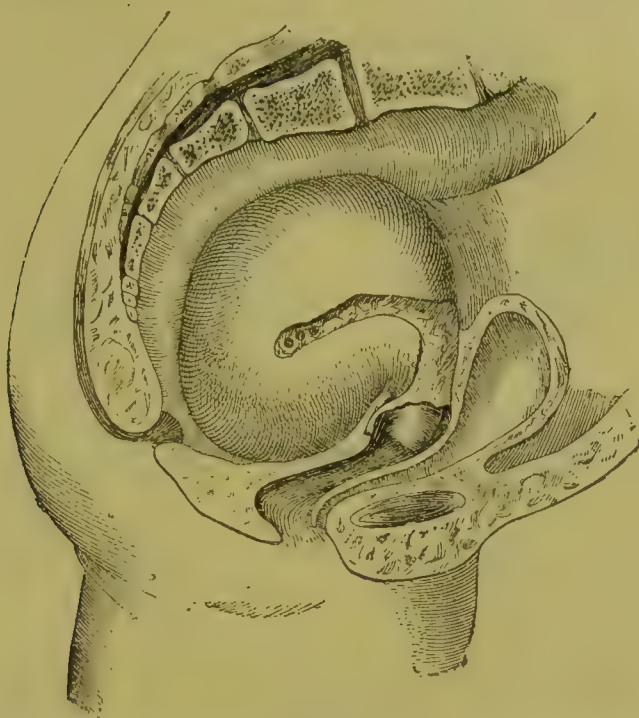


FIG. 400.—Retro-flexion of the gravid uterus. Cervix close to the pubis, directed downwards and forwards. Fundus thrown backwards towards the perineum (after Barnes).

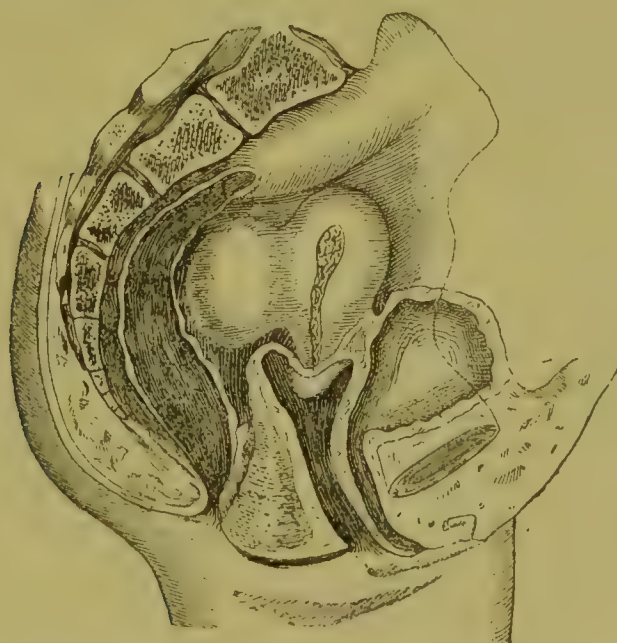


FIG. 401.—Fibroma projecting from the posterior wall of the uterus and compressing the rectum.

difficult to distinguish hematocele either from a hydatid cyst of the pelvis or from an *ovarian cyst* fallen into the retro-uterine *cul-de-sac*.

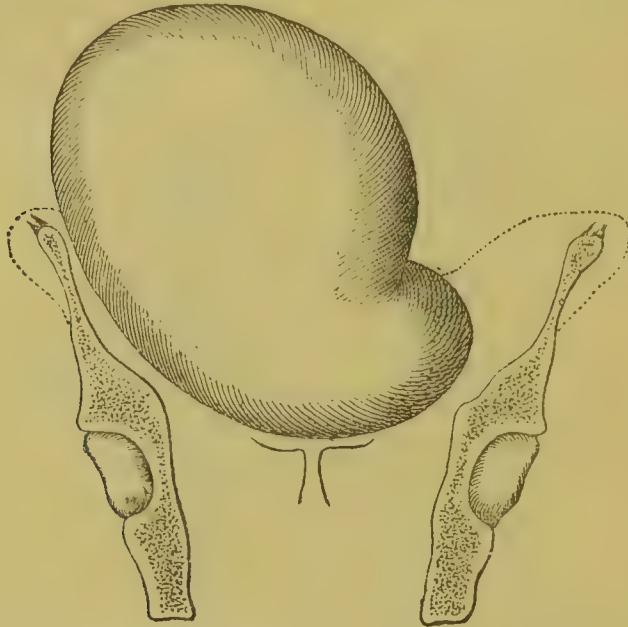


FIG. 402.—Outline of the abdominal tumour in ovarian dropsy (after Graily Hewitt).

When the cyst occupies its usual place it is too independent of the pelvic cavity, acquires too large a size and is too spheroidal in form not to be easily distinguished from hematocele.

The following table gives a *résumé* of the principal elements of the differential diagnosis :

*Phlegmon of the broad ligament and
suppurative pelvic peritonitis*

Connected with delivery, abortion, or any other inflammation of the genital economy.

Phlegmon, a tumour of moderate size, not displacing the cervix, often at the side, formed after the commencement of symptoms, hard at first and very sensitive, gradually softening and becoming fluctuating.

Pelvic peritonitis rises above the brim, not displacing the fixed uterus to any great extent.

General symptoms, continuing till the pus makes a way of escape for itself.

Hematocele

Unconnected with any of these circumstances, and manifested at other periods than those of delivery.

Large tumour, pushing forwards the cervix behind which it is situated, formed at the commencement of the disease, soft at first, not sensitive, hardening with time and losing the character of fluctuation, descending to the lowest portion of the cavity and displacing the fixed uterus to a great extent.

General symptoms, diminishing after a few days, long before the termination of the malady.

Extra-uterine pregnancy

Proceeds slowly.
At first no functional disorder, afterwards the disorders of normal pregnancy.
Fœtal sounds, fœtal movements.
Sometimes amenorrhœa, sometimes regular menstruation, but no metrorrhagia.

Retroflexion and retroversion

In the state of vacuity: slow development, no diminution in size.
In the gravid state: symptoms of pregnancy.

Fibroid tumours

Development slow, always increasing. Sometimes occur at the time of the menopause.
Amenorrhœa, abundant leucorrhœa or metrorrhagia.
Nodulations, density unequal.
Softening rare.

Ovarian cysts

Development very slow, but unlimited.
No symptomatic disorders.
Tumour at first fluctuating, and then hard.

Extra-peritoneal hematocoele
(Hematoma)

Tumour descending into the recto-vaginal septum.
Uterus pushed upwards and forwards, more distinct from the abnormal tumour.
Violet colour of the vaginal *cul-de-sac*.

Hematocoele

Commences suddenly.
General symptoms more or less serious from the beginning.
Results from auscultation *nil*.
Menstrual disorders coinciding with metrorrhagia.

—
The uterus and tumour mutually independent.

—
Rapid development, subsequent diminution, always in the period of sexual activity.
Menstruation and metrorrhagia.
Regularity of outline, density equal.
Softening frequent.

—
Rapid evolution followed by decrease.
General symptoms more or less serious.
Tumour always fluid and fluctuating.

Intra-peritoneal hematocoele

Tumour higher up, projecting at the sides and behind the uterus.
Uterus fixed (in varying directions) so that it cannot be raised.
No discoloration, frequent paleness of the mucous membrane.

It will be seen that a sanguineous tumour of the pelvis is easily diagnosed if due attention is paid, but it is often very difficult to say what has been the source of the hæmorrhage.

Treatment.—Peri-uterine hematocoele, although not to be compared in gravity with peri-uterine phlegmon, is yet a serious affection. It not only places life in danger and requires long continued treatment and rest, but it also leaves adhesions which may prevent conception. Or, even admitting the possibility of conception, there would be reason to fear that these adhesions might become causes of abortion. Therefore the prognosis is always grave. Hematocoele is not always fatal, but it is always serious, the intra-peritoneal form more so than the extra-peritoneal. Récamier's treatment of hematocoele consisted at first in puncture of the tumour by the vagina; but hæmorrhage having occurred in one of Malgaigne's patients and symptoms of purulent

infection in other cases, this physician gradually abandoned the operation. Nélaton, who had adopted it in principle, was the first to restrict its application, only employing it in cases in which the tumour was liquid, and in which the pains were very intense. This opinion has been adopted universally. Seyfert¹ of Prague has only once resorted to puncture out of 66 cases that he has treated in four years. Although I do not recommend puncture by the vagina, unless capillary puncture be attempted, it should be performed when necessary: the surgeon being placed in front of the patient, the left index and middle fingers are introduced into the vagina and applied to the most projecting part of the tumour. The cannula of the trocar is placed between the two fingers and kept against the tumour; the stylet is then introduced into the cannula with the right hand and plunged into the cyst. The stylet is then withdrawn and the fluid allowed to escape, or it may be drawn off by aspiration before the cannula is withdrawn; injections should not be used unless they become necessary.

As our knowledge of these tumours has increased, medical treatment has more and more usurped the place of surgical treatment, which is a subject for congratulation. If we remember that *hæmorrhage* always precedes sanguineous tumours of the pelvis and that *peritonitis*, more or less circumscribed, is the consequence and that suppuration may ensue, we may deduce from these data the principal therapeutical indications (*hemostatic antiphlogistic* treatment). If we knew the exact moment of the hæmorrhage we could, by the application of ice to the hypogastric region, and by the use of perchloride of iron, ergot and other astringents internally, arrest its course and so avoid the formation of large hematoceles. These therapeutical means might be applied even when the hæmorrhage seems to be arrested, being suspended only when symptoms of peritoneal inflammation make their appearance. If peritonitis is developed, leeches should be applied (from 15 to 25), either on the side of the abdomen corresponding to the tumour, or at the anus, but in the latter case the number should be small, and the application should be repeated the next day; or they may even be applied to the cervix or on that part of the tumour which projects into the vagina. Opium should be given in large doses either by the rectum or mouth (three to four grains in the 24 hours). The state of the bladder should be inquired into, for there is often tenesmus and sometimes retention of urine. In the latter case the catheter should be used (a gum-elastic one is the most suitable, as it accommodates itself more readily to the torsion undergone by the urethra). If peritonitis is accompanied by repeated vomiting, recourse should be had to anti-emetics (seltzer-water, ice, belladonna, &c.) associated with blisters on the hypogastrium, mercurial preparations (calomel in small doses and frictions with mercurial ointment); but as a rule it is well to reserve these means till pain has ceased and the tumour has a tendency to resolution. Mild purgatives such as castor-oil or magnesia are useful in overcoming the constipation kept up by compression of the rectum. Belladonna should also be substituted for opium as it

¹ Saexinger, *Spitalszeitung*, 1863, Nos. 43—45.

exercises a different action on the intestines. Rest in bed, fomentation, sedative cataplasms, spare diet, are necessary adjuvants in serious cases; in simple cases they alone suffice to effect a cure. When the tumour has a tendency to suppurate and there is slight erratic shivering, sulphate of quinine is useful. When there is pus, the strength should be kept up by good wine, bark and iron, associated with wholesome and nourishing diet. By these means it is possible to cure hæmatocele and to prevent purulent infection which is greatly to be feared when the tumour opens into the rectum. To sum up, prophylactic treatment consists in preventing pelvic hæmorrhage, in putting the patient on her guard against everything that could have a tendency to increase menstruation or to suspend it suddenly.

Curative treatment may be either medical or surgical.

Medical treatment is most successful. The following are the principal indications: 1, to moderate sanguineous fluxions and arrest the hæmorrhagic molimen; 2, to subdue the symptoms of partial peritonitis which almost invariably occur at the commencement of hæmatocele; 3, to promote and increase absorption; 4, to modify the secreting peritoneal irritation, confining it within the limits necessary for the resolution of the clot and the absorption of its elements; 5, to prevent or moderate the exacerbations which are manifested at the menstrual period; 6, to tonify, even by the use of preparations of iron, in order to promote absorption and avoid purulent infection.

Surgical treatment is only applicable to extra-peritoneal hematomata or hæmatoceles (Nonat) and to intra-peritoneal encysted hæmatoceles which threaten to rupture and pour out their contents above the pelvis, causing fatal peritonitis (Nélaton). It may be indicated by the large size of the tumour, the compression of the neighbouring organs, the imminence of rupture, the acuteness of the pain, the gravity of the reaction. Puncture, in place of being made by the abdomen, hypogastrium or rectum ought to be performed through the vagina. A simple trocar or capillary aspirator, a bistoury and lithotome may be substituted for the pharyngotome employed by Récamier, for Nonat's lancet trocar, Robert's flat trocar, &c. To empty the cyst, to extract the clots contained in it, to make detersive injections, and to fill the vagina with an india-rubber bladder: such are the means for preventing purulent infection.

CYSTS OF THE OVARY AND GENITO-PELVIC TUMOURS

1. *Ovarian Cysts*

Ovarian cysts are tumours which may acquire a considerable size, formed as the name indicates by one or several membranous sacs of various dimensions, developed in most cases at the expense of the ovarian tissue and distended by a fluid of variable consistency and composition. They are developed very frequently even when they do not constitute the original disease of the ovary, in virtue of the law by

which there is a more or less marked predisposition in all our organs to the formation of morbid products resembling the normal structure.

From the *pathological* point of view cysts may be divided into simple and compound¹.

Their structure and composition vary in the different kinds of cysts according as they are: 1, uni-locular, 2, multiple and multi-locular, 3, mixed or composite.

1. *Uni-locular cysts*.—The structure of the sac is usually very simple: there are, however, three membranes. The peritoneum forms the external envelope. Then comes a fibrous tunic, which is sometimes thin and transparent, at other times thick and formed of fibrous tissue; this tunic is traversed by vessels especially by large veins and arteries frequently presenting a tortuous course; muscular fibres are also occasionally seen in it. The third layer, the internal envelope of the wall of the cyst, has a serous or sero-mucous appearance, is lined with epithelial cells and formed by the internal membrane of the Graafian vesicle. In some old uni-locular, multi-locular or mixed cysts the envelope is encrusted with cartilaginous or calcareous matter exactly like the middle coat of the arteries in cases of ossification. The contents usually consist of a lemon or amber-coloured serous fluid; but they vary in different patients, according to the size of the cyst and according to the period at which the fluid is extracted, the number of punctures which have been made, &c. Thus the fluid is sometimes colourless, viscous and albuminous, or rather par-albuminous (Kœberlé), coagulated by heat and nitric acid, being produced from the cavity of the granular membrane (ovisac);² sometimes it is very thick, containing a number of crystalline lamellæ of cholesterine, or a variable quantity of blood, which gives it a chocolate colour (hæmorrhagic cysts, lymphatic cysts, consecutive to the fall of the capsule and of its rich sanguineous and lymphatic vascular network); at other times it is greenish yellow and contains a considerable quantity of pus which denotes inflammation of the cyst and modifies the prognosis.

2. *Multiple and multilocular cysts*.³—These are the most numerous; only it must be observed that in the majority of cases one of the divisions is developed disproportionately with regard to the others, and that although the latter may be multiplied, they remain fixed against one side of the cyst, usually towards the

¹ Kiwisch von Rotterau (*Klinische Vorträge über specielle Pathologie und Therapie der Krankheiten des weiblichen Geschlechts*. Prague, 1849).—Paget (*Surgical Pathology*, vol. ii, p. 26).—Cruveilhier (*Anat. pathol. gén.*, t. iii, p. 398).

² The microscope reveals the existence of yellowish granular globules of $\frac{3}{1000}$ mm. in diameter, the envelope of which is made more apparent by acetic acid, the granulations not being dissolved by ether (Bennet, Kœberlé, Drysdale).

³ Farre (*Cyclopædia of Anat. and Phys.*; *Uterus and its Appendages*. London, 1859) confines the term *multilocular* to cysts in which partitions have been formed in consequence of endogenous proliferation, and *multiple* to those formed by the aggregation of several simple cysts, developed simultaneously in the same ovary.

pedicle of the ovary, a circumstance which, from a clinical point of view, reduces all cysts of this category to the condition of unilocular cysts. In other cases the sacs of which the cyst is composed



FIG. 403.—Right ovary showing numerous unilocular cysts, consisting probably of dilated Graafian vesicles. Left ovary similar, unopened (after Hooper).

may be the result of the division of one large cyst or of the aggregation of small cysts which were originally independent (these are very rare), or rather as the result of endogenous proliferation, a kind of budding of the internal membrane, giving rise to smaller or secondary cysts, from which are developed cysts of the third order.



FIG. 404.—Left ovary distended into one large cyst, in the interior of which numerous smaller cysts of the second order project.

The various divisions rarely communicate with each other; this peculiarity is only manifested in cysts divided by septa, and there is then always a good number of sacs which remain independent. In all these multilocular cysts, especially in those re-

sulting from an aggregation of smaller cysts or from proliferation of the internal membrane, some of the sacs are larger than others; generally there are one or two large sacs, a larger number of average size, and a still greater number quite small, from the size of a millet-seed to that of a nut. The septa are often very resistant, and we can only penetrate from one into another by successive punctures.

The contents may resemble those of the unilocular cysts, presenting the same differences in different patients. But usually they are viscous, gelatinous, more or less thick, escaping with difficulty by the cannula of the trocar, especially when all the sacs are moderately developed and nearly equal, and sometimes producing no precipitate with heat or nitric acid (colloid cysts, cysto-adenomata, adenoid tumours of the ovaries). But what proves that the various divisions are independent, and gives reason to presume that in certain cases this independence is primary, is that we can sometimes see that the fluid of one division differs more or less in nature, consistency and colour from that of another.

3. *Mixed or composite cysts.*—They are characterised by the addition in variable proportions to the cystic products of new pathological elements, normal or abnormal, simply hypertrophic or the result of degeneration, or even peculiar to the ovary. The cyst is formed not

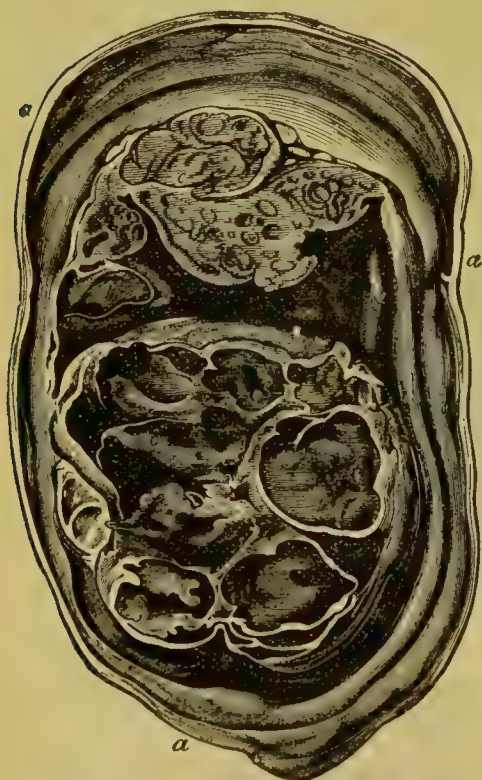


FIG. 405.—Compound and proliferant ovarian cyst. Secondary and tertiary cysts.



FIG. 406.—Ovarian cyst, containing hair, fatty matter, adipose tissue, sebaceous glands, hair follicles, &c. (after Cruveilhier).

only by the hypertrophied envelope of the ovisac or of the tissue proper of a follicle, but also by the hypertrophy of a portion of the stroma of the ovary with infiltration of serum or other pathological fluids, giving to the envelope at one or several points an abnormal thickness and a peculiar appearance characterised by the term *areolar*; or by the hypertrophy of the fibrous tissue, forming in the ovary one or several *fibroids* analogous to uterine fibromata, projecting more or less into the cavity of the cyst and encrusted with calcareous matter at one or several points, and sometimes attaining to so considerable a size as to constitute more than the half of the ovarian tumour; or by the formation of epithelial cells, multiplying with great rapidity and in such a manner as to make them resemble other tumours formed by the proliferation of the epithelial cells of tubular glands and known as adenomata, adenoid tumours, *heteradenic* tumours; or by a matter more or less liquid, more or less solid, presenting in its structure, its consistency, its external form, its nodulated appearance and its development the characters of colloid matter, scirrhus, encephaloid, or melanosis, in short of the different varieties of *cancer*.

The contents of one division may differ from those of another, or those of the cavity of the true cysts from those of the cystoids and of the lacunæ, which are often hollowed out in the pathological tissues formed around them. In this way serum, albuminous fluids, sanguinolent serosity, pus, epithelial débris, crystals of cholesterine, cancerous fluid are sometimes met with simultaneously or separately in the various cavities of mixed cysts.

Dermoid tissue and the products depending on it, such as sebaceous or fatty matter, tufts of hair, bones, teeth, nails,¹ &c., which have been falsely attributed to ovarian pregnancy, are products which may be considered as partly belonging to the cyst and partly to its contents. As for hydatid cysts, few cases are recorded of their development in the ovary.²

Of all these varieties of ovarian cysts which is the one which most frequently occurs? The only statistics which we have are those of Scanzoni, which are based on too small a number of cases to allow of the question being determined. But the following interesting remark made by Cruveilhier shows that all these varieties may exist in a rudimentary condition in ovaries the size of which is hardly increased. "The ovaries may present in miniature all the varieties of large ovarian cysts. For instance, we find in these little ovaries, hardly as large as a pigeon's egg, serous unilocular cysts, serous multilocular cysts, multiple cysts, areolar cysts, the whole being in infinitely small proportions but remarkably clear; they are perhaps cysts in the first stage which abort for want of nutrition."³

¹ Cruveilhier (*Anat. path. gén.*, t. iii, p. 572). According to Kœberlé dermoid cysts are more frequently to the right. Patients affected by them usually enjoy good health.

² Bauchet, *Anat. path. des kystes de l'ovaire*, &c. (*Mém. de l'Acad. de méd.*, t. xxiii, p. 49. Paris, 1859).—Charcot, *Mém. sur les tumeurs hydatiques*, &c. (*Gaz. méd.*, 1852).—Davaine, *Traité des entozoaires*.

³ Cruveilhier, *Anat. path. gén.*, iii, p. 445. Paris, 1856.

The *origin and development* of these various kinds of cysts are hardly doubtful. Exceptionally they are external to the ovary; but the development of considerable cysts formed at the expense of Rosenmüller's organ, the remains of the Wolffian body, or at some point of the broad ligaments is a fact which, although verified, is very rare.¹ In the immense majority of cases it cannot be denied that it is the ovary which is the seat of development of ovarian cysts. Neither can it be denied that the tissue, improperly called stroma, of this organ is usually foreign to their formation, and that it is equally difficult to trace their origin to vesicles said to be formed any how or first coming to light in the interstices of this stroma. Both indirectly by the method of exclusion and by direct observation we are led to seek the origin of these cysts in the development of the ovisacs or Graafian vesicles (which Cazeaux called ovarian cysts in miniature²), and to verify the alterations of nature and direction which vitiate this development,³ rendering it pathological and deviating it from its destination of the ovigenous capsule to the monstrous development of a more or less complex cyst. In short, these cysts are simple or complex dropsies of Graafian vesicles (follicular dropsy).

It is not rare, especially in pregnant or puerperal women, for a number of follicles to become dropsical and for ovules to be found when the fluid which is obtained in opening each separately is carefully preserved; conditions of this kind usually coincide with catarrhal leucorrhœic affections of the genital economy; they may simulate menstruation, being accompanied by a sanguineous discharge (pseudomenstruation), and merit the name of *catarrh* of the Graafian follicles.⁴

Not only do Cruveilhier,⁵ Rokitansky,⁶ Lebert,⁷ and the majority of pathological anatomists admit this origin, at least for simple unilocular or multilocular cysts, but Wilson Fox⁸ has described the manner in which the increase, proliferation, and endogenous multiplication of the internal membrane of the vesicle are produced in the formation of a multilocular cyst. The excrescences which arise from the internal wall of these cysts and which have obtained for them the name of proliferous cysts, are papillary fibroid excrescences, dendritic or

¹ Bauchet, op. cit., p. 54.—Rafael Herrera Vegas, *Études sur les kystes de l'ovaire et l'ovariotomie*, p. 16, note by Ordoñez. Thèse de Paris, 1864.—Spencer Wells, *Diseases of the Ovaries*, i, pp. 91, 240, 303. London, 1865. See further on the origin of cysts of the broad ligament (p. 781).

² *Des kystes de l'ovaire, thèse pour l'agrégation*. Paris, 1844 (a remarkable work).—*Bulletin de l'Acad. de méd. de Paris*, 1856.

³ Hæmorrhage into an ovisac appears sometimes to be the origin of this pathological development, as several preparations in Guy's Hospital seem to prove (Bright, *Guy's Hospital Reports*, vol. iii, pp. 181 and 193. London, 1831).

⁴ Virchow, op. cit., t. i, p. 259.

⁵ *Anat. path. gén.*, iii, 395. Paris, 1856.

⁶ *Lehrbuch der patholog. Anat.*, iii, 424. Vienna, 1861.—*Wiener Wochenblatt*, 1855, No. 1, and *Abnormitäten des Corp. luteum*, in *Wiener allg. med. Zeitung*, 1859, pp. 34 and 35.

⁷ *Physiologie pathologique*, ii, p. 65. Paris, 1845.—*Anatomie pathologique*. Paris, 1855—61.

⁸ *On the Origin, Structure and Mode of Development of the Cystic Tumours of the Ovary* (*Medico-Chirurg. Transactions*, xlvii, p. 227. London, 1864).

cauliflower, villous or vascular, or it may be glandular, formed by the juxtaposition of these latter; they are probably multiplied by the same pathological process which leads to the formation of vesicular moles, *i.e.* which produces multiplication, hypertrophy, and dropsy of the chorial villi. The fusion in places of these excrescences and their ulterior development, the division by septa of glands of new formation, the elongation and division of the numerous microscopic cysts contained in the wall, account sufficiently for the development of the sacs, which are often so numerous and of such different dimensions, in ovarian cysts.

Diagnosis — subjective signs.

—Ovarian cysts, like all uterine maladies, are usually produced during the age of sexual activity,¹ but they may be met with in childhood² (I have seen one in a child of eleven who had never menstruated), and may also be developed in old age; in the latter case they are very seldom fully developed but appear as if atrophied. When they have commenced during the period of sexual activity without deter-



FIG. 407.—Part of the wall of an ovarian cyst, covered on the internal surface with cauliflower excrescences and pyriform vesicles (after Paget).

mining serious accidents they may continue to develop after the menopause and become enormous even in women of 60. Ovarian cysts are met with in virgins and widows as well as in married women,³ which shows the slight influence exercised by coitus on their development. They also occur in women who have never conceived,⁴ and so frequently that we may conclude that probably the

¹ The frequency of ovarian tumours with regard to age is as follows: According to Chéreau, out of 230 there are 133 between 17 and 37 years of age.

„	Lee,	„	135	„	82	„	20	„	40	„
„	Scanzoni,	„	97	„	70	„	18	„	40	„
„	West,	„	94	„	64	„	25	„	40	„

² And even in the newborn infant. See Boullard and Mayer of Bonn, quoted by Bauchet, *op. cit.*, p. 7.—Cullingworth, quoted by Hayem, *Revue*, t. v, p. 762.—Kiwisch, *op. cit.*, ii, p. 79.

³ There were according to

Lee,	out of 136 patients,	88 married women,	37 virgins,	11 widows.
Scanzoni,	„ 97	„ 45	„ 40	„ 7
West,	„ 94	„ 57	„ 24	„ 13
Tilt,	„ 475	„ 289	„ 166	„ 20

⁴ According to Scanzoni, out of 97 patients 51 were nulliparæ (out of the 51 there were 16 virgins). According to West, out of 70 married women or widows 26 were nulliparæ.

ovaries were (before the apparent development of the tumour) in a pathological state incompatible with the normal accomplishment of their functions. They may be developed in either ovary, but more



FIG. 408. — Follicular dropsy of the ovary in a child of ten (Virchow).

frequently in the right, at least in the case of dermoid cysts (according to Kœberlé albuminous cysts are more frequently situated on the left side), and in a number of cases in both ovaries simultaneously. Tilt¹ has observed out of 475 cases of ovarian cysts that the seat of the malady was in the right ovary 260 times, in the left 170 times, and in both ovaries 42 times. These statistics, as well as those of Lee, Chéreau, Scanzoni and West,² seem to confirm the relative frequency of the development of cysts in the right ovary; but it is only based, like the others, on the rather uncertain data of a diagnosis made during life. The post-mortem

examination of 80 cases recorded by Scanzoni, Lee, and West does not exactly confirm this result; for in these 80 cases the malady only occupied the right side 28 times, the left 26 times, and both ovaries 26 times. Sometimes they are developed without the slightest disturbance of the neighbouring organs and general economy, or they produce only a sensation of discomfort; after a time, however, they increase rapidly. At other times symptoms are manifested in the pelvis, such as a sensation of weight, rectal or vesical tenesmus, retention of urine, menstrual and other functional disturbances. If the tumour is formed rapidly or accompanied by irritation or inflammatory phenomena, the commencement even may be marked by shooting pains in the diseased ovary. In some women pain is never felt at all, whilst in others on the contrary it is produced in proportion to the rapid development of the cyst, to the congestion caused by the catamenial fluxion in the diseased ovary, to the development of inflammation in it, or to the degree of inflammation set up in the peritoneal serous membrane by which adhesions are formed between the cystic envelope and the visceral or parietal peritoneum, which by interfering with the mobility of the cyst produce additional pain. At an advanced period pain is also produced by the compression which the cyst exercises on the neighbouring organs—the bladder, rectum, intestine, stomach, ureters, sciatic nerve, &c.—and by the difficulties which it places in the way of their functions.

The increase in the size of the cyst is not continuous; sometimes the tumour remains stationary for a long time, and then suddenly makes great progress, which only ceases when the ovarian sac and ab-

¹ The *Lancet*, Dec., 1849, Feb., March, 1850.

² The seat of ovarian tumours is according to Chéreau, out of 215 cases, 109 to the right, 78 to the left, 28 on both sides.

Lee,	„	93	„	50	„	35	„	8	„
Scanzoni,	„	41	„	14	„	13	„	14	„
West,	„	92	„	35	„	38	„	19	„
Bloff,	„	54	„	31	„	23	„	0	„

dominal cavity are distended to their utmost limits. At other times the increase of the tumour is intermittent, the fits of development often corresponding with the menstrual period. The compression of neighbouring organs, whether in the pelvic or abdominal cavity, gives rise to new symptoms. The bladder being at first compressed on a level with the cervix, and afterwards pushed against the pubis, or raised upwards towards the abdomen, there is at one time dysuria, vesical tenesmus and retention, and at another incontinence of urine. If the ureters themselves are compressed the catheter is powerless, and the urine accumulates in these excretory canals which become enormously distended. Compression of the intestines often causes constipation and occasionally alternations of constipation and diarrhœa; but I have seen many patients in whom the bowels acted regularly owing to the fact that the sigmoid flexure and rectum experienced but slight compression from the tumour, as it had risen into the abdomen; on the other hand compression may be strong enough to determine intestinal occlusion¹ and stricture of the rectum. Compression of the intra-abdominal vessels causes dilatation of the superficial abdominal veins, which form blue networks under the skin to take the place of the deep venous circulation, œdema of the vulva, especially of the *labia majora*, more rarely œdema of the lower limbs and abdominal walls and, more rarely still, ascites. Pressure on the sciatic nerve determines a pricking sensation, pulsating, darting pains shooting down the thigh of the diseased side. The phenomena of compression of the pelvic organs are manifested especially at the beginning, when the cyst is contained in the pelvis; in proportion as it rises and as the utero-ovarian pedicle is elongated, these phenomena disappear, and it is on this account that we often see the lower limbs emaciated and wrinkled, and forming a singular contrast with the enormous distension of the belly. I have even seen cases in which the excavated form of the tumour behind (owing to a movement of torsion effected by the ovary in the first period of the development of the tumour) allowed the large vessels in the abdomen to escape all pressure. Lastly, at the most advanced period the effect of the compression exercised by the cyst is felt especially by the thoracic organs, disturbing respiration and the cardiac circulation.

Menstruation is variable. In some patients the appearance of the tumour is preceded by menstrual disorders (according to Scanzoni, 37 times out of 57); after the cyst is developed it may seem to exercise no influence on the regularity of the monthly period, especially if one ovary remains normal; it sometimes is accompanied by metrorrhagia, more frequently by dysmenorrhœa or amenorrhœa; the persistence of the cystic tumour does not prevent the menopause from being established normally; the definite increase of the cyst and the cessation of the catamenia seem in a few patients to be two concurrent phenomena. When the menses cease completely from the commencement of the malady we may suppose that there is some serious disorder, *i. e.* a cancerous or other degeneration of the tissue of both ovaries;

¹ Cruveilhier, *Anat. path. gén.*, iii, p. 412.

for the menses continue even with cysts in the two ovaries if any portion of the organs preserves its normal structure and is able to perform its functions. It is impossible for so large a tumour to distend the abdominal cavity without the general health suffering greatly; therefore, although some patients only succumb after repeated punctures, and after carrying the tumour for more than twenty years, there are others in whom the cyst reaches an enormous size in six months, weighing 55 lbs., and rapidly ending fatally. The average duration

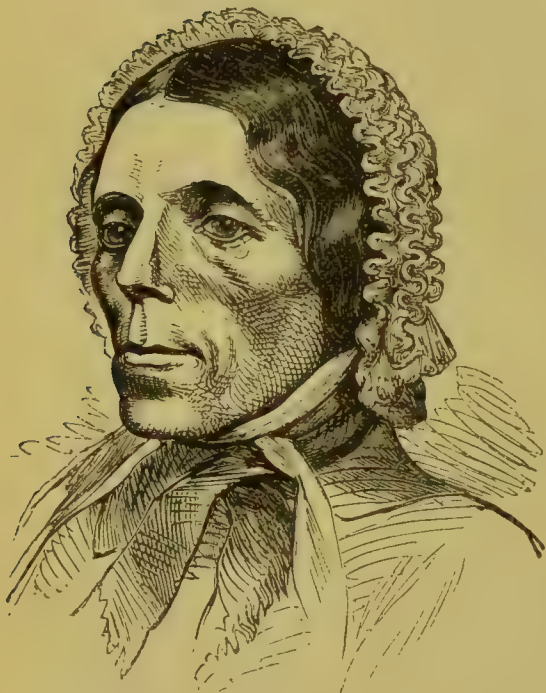


FIG. 409.—“Facies ovariana,” from the photograph of a patient of 42 who had a compound ovarian cyst, operated on and cured by Spencer Wells.



FIG. 410.—External aspect of the abdominal tumour formed by a multilocular ovarian cyst in a woman of 32 (ovariotomy, cure, birth of a child 15 months afterwards). (After Spencer Wells.)

of life is from two to three years. The tumour injures the constitution in three ways: by the mechanical obstacle it opposes to the movements of the organs, to their circulation and to the accomplishment of their functions; by the irritation or sympathetic disorders which it occasions in others; lastly, by the change of direction given to nutrition, the growth of the cyst and the increase in its secretion taking place at the expense of the general assimilation throughout the system.

The alteration in the general health is especially noticeable in young women and when the tumour is rapidly developed. Without speaking of such complications as inflammation of the cyst, secretion of pus,

&c., which greatly accelerate the course of the disease, we may say that in such cases digestion is difficult and slow, the intestines swell, respiration is impeded, especially after meals; circulation is not perceptibly affected, there is little or no fever, but the difficulty which the blood has in circulating through the large vessels causes a small and frequent pulse, palpitations and a tendency to syncope. Under the influence of these disorders of the principal functions, of their reaction on the nervous system, of the anæmia which results, and of the attraction exercised by the cyst on the elements of nutrition, increasing emaciation is produced. The lower extremities when not œdematous acquire a dryness and sparseness contrasting with the infiltration to which they are subject in the case of ascites; the hands and arms become thin; the chest and neck contrast by the angular projection of their bones with the spheroidal tumefaction of the upper portion of the abdomen; the face, too, is affected by this general emaciation; it becomes wrinkled, the lips are pinched, the nose pointed, the eyes sunk, all the features acquiring the look of premature old age, although the still brilliant eye shows that vitality is stifled by the development of a parasite rather than disorganised in its constituent elements. This appearance differs considerably from that which cancer, chlorosis, chloro-anæmia, and even recent delivery and uterine diseases impart to the countenance, so much so that Spencer Wells has designated it by the name of "*facies ovariana*" to contrast it with the "*facies uterina*" which I have already described.

Objective signs.—Palpation must be combined with vaginal and rectal touch in order at the beginning to be able to diagnose in the pelvis the presence of a tumour which is often indolent, varying in size from that of a nut to that of a foetal head, round, resistant, but depressible and elastic, or soft and fluctuating, escaping from the grasp of the fingers, mobile in several directions, pushing the uterus forwards or on one side, and compressing the rectum more or less. When the cyst is situated above the brim it increases the size of the belly. This symptom seems to strike the patient less than the physician, when the tumour is indolent; but the increased size of the abdomen as ascertained by measurement, the form of the tumour, the results furnished by palpation, percussion and touch, leave no doubt as to the origin and nature of the malady. The abdomen is not only tumefied but altered in its form. In place of being distended in every direction as by ascites it is manifestly raised by a globular tumour, recalling that of the gravid uterus, but sometimes nodulated instead of simple, less central, less inclined to the right, commencing usually on one side and directed towards the hypogastrium, making the abdomen project in its median portion where it yields more than elsewhere, and rising towards the epigastrium or hypochondrium. Ovarian cysts may acquire an enormous size, filling the whole belly and distending the envelopes and skin excessively, producing streaks and vibices and describing broad blue undulating lines due to the distension of the subcutaneous veins, descending in front of the thighs to the knees and pushing the false ribs and xiphoid cartilage of the

sternum upwards and outwards, weighing as much or even more than the patient herself. I have seen some which measured more than two yards in circumference, and from which I extracted thirty quarts of fluid.¹ The density of this fluid being greater than that of water and the weight of the cystic envelope and of the tumours adhering to it varying from eleven to thirty-three pounds, we can judge of the enormous weight which the presence of such a tumour adds to that of the patient, which emaciation sometimes reduces below 110 pounds. The weight of the tumour has been known to exceed 165 pounds (Kimball).

Palpation discovers the size and limits of a round tumour, occasionally nodulated, regularly circumscribed, usually indolent; sometimes mobile, being easily displaced under the combined influence of palpation and change of posture, falling to the most dependent side; sometimes retained in one of the iliac fossæ or towards the upper portion of the abdomen; usually tense, seldom depressible or soft; however mobile, fixed in the pelvis by a more or less loose pedicle; difficult to circumscribe and still more so to move when it completely fills the abdominal cavity and distends the cutaneous envelope excessively. Palpation often enables us to verify the simultaneous presence of solid tumours and of an encysted fluid by the difference in consistency, hardness, or resistance. On percussion dulness is perceived throughout the whole extent of the tumour, at its summit, at the apex of the belly if the patient is lying, as well as near the pubis and iliac fossæ. There is tympanitic resonance in the posterior portions, in the flanks, towards the loins, in the epigastrium and in the hypochondriac regions, especially on the left side. The dulness does not change perceptibly on the patient changing her position. Fluctuation should be carefully sought for. It is well marked when the cyst is large, serous and unilocular; in other cases it is obscure and may even be absent. Sometimes in trying to discover fluctuation the displacement *en masse* of the contents of the cyst is perceived, pushed back by one hand of the examiner towards the other; but what Cruveilhier calls the *choc par contre-coup* is not perceived; that is when the contained matter is soft rather than fluid or when there are several contiguous cysts. At other times we perceive very distinctly this *choc par contre-coup*, *i.e.* the result of the molecular disturbance produced by very rapid percussion suddenly imprinted on the point diametrically opposite that on which the hand is placed; but this shock can only be felt at short distances, the undulation is shut off (multilocular cysts), or it is perceived from one pole of the tumour to the other (unilocular cysts); sometimes a multilocular cyst with one large predominating cyst is diagnosed in this way.

Vaginal touch (which when necessary should be followed by rectal touch), either alone or combined with palpation and percussion, enables us to diagnose deviations and even displacements of the uterus,

¹ I have recently extracted nearly 50 quarts from an enormous cyst, which I have reason to suppose was developed from the broad ligament, for the transparent, serous, slightly yellowish fluid did not coagulate on boiling.

sometimes ascent, sometimes prolapsus, at other times compression towards the pubic symphysis and anteversion, more frequently a lateral or posterior inclination,¹ and a certain degree of torsion. It is important to determine at the same time whether the uterus is mobile; this mobility depends on the variable length of the *pedicle* of the ovarian tumour formed by the Fallopian tube and the peritoneal fold enclosing the ovarian vessels and nerves. Vaginal touch also reveals the pre-



FIG. 411.—External aspect of the abdominal tumour formed by a compound ovarian cyst in a woman of 34, complicated with ascites, dilatation of the subcutaneous veins, impossibility of sleeping except in a chair, &c. (ovariotomy and death the fifth day). After Spencer Wells.

sence of the cyst in the pelvic cavity when the tumour is as yet but slightly developed, or when it presents prolongations and inequalities on its lower portion. In other cases it hardly allows of our reaching the cyst, or only when pressure of the other hand on the abdomen pushes down the cyst and enables the tip of the finger to perceive its rounded surface, and to recognise its resistance, depressibility and fluctuation. It also enables us to form an opinion as to whether the cyst is in the right or left ovary, according to whether the uterus inclines to right or left. The sound will help us to judge of the mobility of the uterus, of the length of the pedicle, of the presence or absence of adhesions between the cyst and the uterus, &c.

Auscultation furnishes valuable indications as to the presence of vessels in the pedicle or in the broad ligament in front of the tumour in consequence of torsion, enabling us to avoid wounding them by puncture. It also enables us to perceive the vibrations resulting from friction of the tumour against the parietal peritoneum due to the absence of adhesions, whilst in other cases it allows us to hear a rougher and more or less extensive friction, coinciding with a thrill. (falsely attributed to hydatids) caused by inequalities produced on the

¹ According to Boinet, the cervix is always pushed to the opposite side from the cyst.

serous membrane by an inflammation which has only developed partial adhesions more or less distant from each other.

Differential diagnosis :

1. *Other tumours which may be confounded with ovarian cysts.*—

1. Amongst *pelvic tumours* parovarian cysts of the broad ligament are developed more slowly, are smaller, are hardly ever adherent, may be enucleated from the peritoneum, the two folds of which cover them and contain a limpid, slightly salt but never paralbuminous fluid, and never emaciate the patient so much as ovarian cysts. However, they also may become very voluminous, giving rise to errors of diagnosis.¹ Peritoneal and subperitoneal serous cysts analogous to the preceding, with walls constituted by false membranes or a kind of ectasia of the lymphatic vessels, seldom attain a considerable size, contain albumen but not paralbumen and have sometimes a pediculated form.² As for other pelvic tumours I have described them sufficiently when treating of ovaritis, tumefaction and inflammation of the tubes, dropsy of these organs, anteflexion, retroflexion, extra-uterine pregnancy, uterine tumours, especially fibromata, commencing pregnancy, hematocele, &c., to make it unnecessary to distinguish them here from ovarian cysts.

2. Amongst *abdominal tumours* ascites is easily distinguished by the uniform distension of the belly, the absence of any tumour perceptible to palpation, the marked tympanitic note at the summit of the abdomen with dulness in the dependent parts, the displacement of the resonance and dulness agreeing with change of position of the trunk, pelvis and abdominal cavity, the frequent oedema of the lower limbs or real anasarca, &c. Serous, purulent, or hydatid cysts or solid tumours of the abdominal walls, of the peritoneum, epiploon, mesentery, liver, spleen or kidneys are usually distinguished by the origin of the tumour, its initial seat above, in front, to right or to left, its development from above downwards, from one side to the other or from before backwards, instead of from below upwards, the possibility of limiting the tumour beneath with the hand and of defining its lower outline, the absence of any pedicle or pelvic adhesions, verified by raising the pelvis and lowering the shoulders so as to make the abdominal organs weigh on the diaphragm and not on the pelvis, the independence of the uterus with regard to these tumours, an independence verified by digital touch, and lastly, by the local or general symptoms manifested in the organ in which the abdominal tumour is developed. Nevertheless there are tumours the diagnosis of which is very difficult, all the more so that fluctuating tumours, encysted peritonitis,³ cysts analogous to

¹ Arning of Hamburg successfully operated upon an enormous cyst of the broad ligament, taken by Spencer Wells himself for an ovarian cyst (*Annales Gynéc.,* 1877).

² Kæberlé (*Gaz. méd. de Strasbourg*, 1876, No. 1).

³ Puistienne, *Remarques et observations sur quelques tumeurs enkystées pelviennes ou abdominales chez la femme*, p. 82. Paris, 1867.—Knackenbusch of Albany (the *Medical Record*, Feb., 1875.—*Annales de Gynécologie*, vi., 237) relates two cases of sub-peritoneal cystic tumours which were taken for cysts of the ovary.

areolar gelatiniform cysts of the ovary,¹ and hydatid cysts,² may originate in the subperitoneal cellular tissue intermediate between the uterus and bladder, or retro-uterine or even in the broad ligament. Such tumours of the epiploon³ have been taken for ovarian cysts. When the tumour is a hydatid cyst enclosing echinococci, more frequent in the liver, spleen, kidneys and epiploon than in the other abdominal organs, the thrill which is said to be pathognomonic can be felt by palpation. Fibrous or fibro-cystic tumours of the womb, all the more difficult to diagnose that they may be complicated with ovarian cysts, are distinguished by the countenance of the patient which is usually normal, and by the uniformly hard or flabby consistency of the tumour. I do not speak of advanced extra-uterine pregnancy nor of advanced normal pregnancy characterised by the signs of gestation, nor of retention of urine nor of the accumulation of fæcal matters which are easily recognised.

II. *The different varieties of cysts and other ovarian tumours.*—Multilocular cysts are sometimes distinguished from unilocular cysts by the appearance of several globular or spheroidal projections; more frequently by the impossibility of perceiving fluctuation except by placing the hands at a short distance from each other, or of emptying the cyst by an exploratory puncture unless the several divisions can be punctured successively by inclining the trocar in different directions after the contents of the first sac have been evacuated; even then we frequently only succeed in withdrawing small quantities of fluid and in slightly diminishing the size of the tumour. We can also ascertain the nature of the fluid which is more gelatinous and thicker in multilocular cysts, or which may differ in one secondary cyst from another.

Compound cysts may be recognised by the presence of hard, resistant, non-elastic, non-fluctuating, solid portions, having a dulness more marked at some point of the periphery of the cyst, either at its upper portion and sides or at its lower portion. Diagnosis becomes easier when the exploratory puncture has evacuated a part or the whole of the fluid contained in the cyst.

Like other ovarian tumours, cysts may be developed either to the right or left; we can easily ascertain this when the cyst is only slightly developed, and we may suspect it in other cases from various indications given by the patient. In rarer cases they are simultaneously developed on both sides. It is important to diagnose this before operating.

Solid tumours of the ovary are usually distinguished by being harder and smaller than cysts, by the irregularity of their form and the symptoms of compression of the pelvic and abdominal organs which are more marked than in cysts; for the latter on account of their globular form, their elasticity, &c., are displaced more easily. Benignant tumours, such as fibroids, are tolerated as easily as cysts, the general symptoms which they produce being more dependent on their size than on their

¹ Cruveilhier, *Anat. path. gén.*, v, p. 191.

² Puistienne, *op. cit.*, p. 12.

³ Cruveilhier, quoted by Puistienne, *op. cit.*, pp. 34 and 36.

reaction on the economy. Malignant tumours, cancer, scirrhus, encephaloid, colloid, rarely reach the size of cysts,¹ and are nodulated and constituted by the aggregation of multiple tumours of variable size and consistency, forming globular excrescences of the ovary rather than a regularly rounded tumour. They compress the neighbouring organs more and have more intimate relations with the uterus. They more frequently determine œdema in the lower limbs or anasarca, as well as ascites and partial peritonitis.

III. *Complications of ovarian cysts and their relations with the neighbouring parts.*—1. *The principal complications of ovarian cysts* are the following: rupture, which when preceded by adhesions with the neighbouring parts, by discharging the fluid incessantly into the peritoneum may induce the cure of a unilocular cyst; but, if produced suddenly, it gives rise to acute peritonitis, and if the fluid is discharged into an adherent organ (bladder,² intestine, vagina, abdominal wall, &c.) the patient succumbs to suppuration or septicæmia. Hæmorrhage may be suspected from the occurrence of symptoms of internal hæmorrhage; but it can only be diagnosed by the sanguinolent appearance of the fluid withdrawn by puncture. Partial or general inflammation is recognised by the symptoms of ovaritis; by rigors, feverish attacks symptomatic of suppuration, by the pains, nausea and tympanitis which accompany the development of peritonitis, &c. Ascites may conceal the presence of an ovarian cyst when the peritoneal cavity is much distended by the fluid; it is, however, seldom that some of the characteristic signs of these two maladies are not observed simultaneously, especially in emptying either the peritoneal fluid or the contents of the cyst. The simultaneous existence of pregnancy and an ovarian cyst may be very difficult to diagnose in the first period of gestation, especially if the cyst has existed for some time and has attained a considerable development; later on, the characteristic signs of the presence of the fœtus leave no doubt. The simultaneous existence of a cyst and of another tumour, whether uterine, ovarian or independent of the genital organs is more easily determined at the commencement of the development of the two tumours, especially when the tumour which complicates the cyst comes from some organ situated at a distance from the ovary.

2. *The relations of the cyst with the neighbouring parts* are perceived on the patient assuming different postures, by raising the cyst in different directions, either through the abdominal wall or by the vagina, by pushing it by graduated pressure in a certain direction, by examining the woman when standing and observing the tympanitic note between the diaphragm and the upper surface of the cyst, by ascertaining that the various displacements do not produce pain, and lastly by observing the retraction of the cyst after puncture and evacuation of its

¹ Clarens, however, once found in a woman of 42 a medullary sarcoma of the left ovary weighing 80 lbs. (*Deutsche Klinik*, 1873, No. 3), and I have dissected one of more than 50 lbs. in weight.

² Breisky of Berne (*Revue de Hayem*, v, 178). Rupture of ovarian cyst into the bladder, with which adhesions had been formed.

contents. We may then be almost certain of the independence of the cyst; besides, deep adhesions of the pelvic cavity seldom exist in the absence of abdominal adhesions. The spontaneous pain, on the contrary, experienced previously by the patient at those spots where mobility of the tumour is doubtful or absent, the other symptoms of peritonitis, whether circumscribed or otherwise, having possibly been already developed, the acute pains of dragging or tearing produced by attempts made to remove the cyst from the organs to which it seems to adhere (from the liver, spleen, abdominal wall and iliac fossa), the impossibility of verifying this separation after repeated ineffectual attempts, the pain experienced by patients either from a full or empty stomach, from the peristaltic movements of the intestine during digestion and from the contractions of the rectum for the expulsion of faecal matters, are symptoms which prevent us from making a mistake as to the existence of adhesions between the cyst and the parts with which it is in contact. According to Kœberlé abdominal adhesions are observed more especially round the umbilicus; adhesions to the epiploon are known by the absence of vibrations at this point; adhesions to the liver, diaphragm and edge of the ribs can only be ascertained by puncture; those with the intestines cannot be diagnosed beforehand, even under such conditions; those with the pelvic cavity are recognised when the cyst cannot be pushed back into the abdomen, even after puncture.

Shortness of the pedicle may be presumed from the impossibility of raising the tumour in the abdomen or of imparting to it the slightest movement, from the defective mobility of the uterus, from the presence of globular tumours in the cavity behind or around the uterus, projecting more or less into the vagina, contributing to fix the womb and experiencing a direct reaction from movements transmitted to the cyst. When the pedicle is long, the tumour is sufficiently raised above the pelvis to prevent the finger reaching more than a spheroidal, broad surface, more or less independent of the uterus, which has preserved to some extent its mobility.

Treatment.—*Medical treatment* ought to be tried, for there are examples of spontaneous absorption of the contents of the cyst followed by cure, but they are very rare. No one knows better than I do the resistance usually offered by ovarian cysts to all medical treatment. Nevertheless, I have never undertaken ovariectomy without having previously tried all other rational means of treatment, and have been so fortunate as to see the use of these means succeed in two very characteristic cases¹ in which I had little hope that resolvent treatment would prove effectual. The treatment employed in these cases may be summed up as follows: chloride of gold and sodium, from two milli-

¹ Large right ovarian cyst, probably unilocular, which had never been punctured, in a single woman of 43; circumference of the abdomen at the umbilicus, one yard. Cure eight years ago. Right ovarian cyst, apparently multilocular, never punctured, in a child of 12 who had never menstruated; circumference of the abdomen at the umbilicus, $\frac{3}{4}$ yard. Cure six years ago. The enormous size of the cysts in both cases authorised the presumption that they were ovarian and not connected with the Wolffian bodies or the broad ligaments.

grammes to five centigrammes daily; tonics and restoratives, iron, bark, &c.; solvents, Vichy water, bicarbonate of soda; resolvent abdominal frictions of iodide of lead and potassium; diuretics, squills, digitalis, nitre; lastly, and above all, methodic and increasing compression of the whole abdominal surface by means of Bourjeaud's¹ excellent elastic belts. In other patients (about a twentieth of the whole) the cyst has appeared to remain stationary or even to diminish in size for some time under the influence of this treatment (sometimes preceded by the evacuation of the fluid), which was tolerated for several years without seriously injuring the health of patients affected by them.

Torsion of the pedicle of the tumour is another means of spontaneous cure. It may extend from half to two and a half turns, and is probably dependent on movements made by the patient while lying and while the tumour is still small. Cysts and even fibrous tumours of the ovary sometimes undergo natural torsion round their axis, which may explain spontaneous cure. This torsion, recently described by Rokitsansky and Klob,² has been attributed by the latter (after experiments made on a dead body to the ovary of which he had attached a membranous sac of the size of an orange) to the rotation imparted to the ovary, always in the same direction, by the alternate repletion of the bladder, which makes the sac turn from within outwards, and depletion of this organ, which lets it fall without turning in the opposite direction. For this effect to be produced the sac must be attached to the external side of the ovary; if on the internal side the same effects are produced, but in the opposite direction. It is accompanied by strangulation of the vessels of the pedicle, the result being, according to Koeberlé, congestion of the cyst, internal hæmorrhage, inflammation and even mortification of the cyst, and complete rupture of the pedicle. Unfortunately we cannot help nature in accomplishing this singular phenomena.

The *natural evacuation* of the contents externally, after the formation of salutary adhesions, may produce cure, amelioration (especially when the cyst is evacuated through the vagina or abdominal wall), or inflammation of the sac, septicæmia and death (especially in cases where the cyst opens into the intestine or bladder).—Rupture with effusion of the fluid into the closed cavity of the peritoneum is still more frequently a cause of death;³ Thomas Keith (the *Lancet*, 10th March, 1877) has, notwithstanding, performed ovariectomy successfully in a case of rupture; it is the result of a suppurative inflammation, gangrene of the cyst, traumatism, or puncture. Chéreau has collected 70 cases of rupture of ovarian cysts with effusion of fluid into the peritoneum, or evacuation through the bladder, uterus, vagina, and abdominal wall. Puech, by collecting 33 additional cases, has raised the total number of these ruptures to 103; out of this number there were 33 deaths, 22 ameliorations, and 48 cures; as examples of the

¹ *Note sur les kystes de l'ovaire; Bulletin de l'Acad. de méd.*, 1857.

² *Österreichische Zeitschrift*, No. 18, 1865.

³ Spiegelberg has recorded three new cases (*Archiv für Gynäk.*, 1870).

latter Richard¹ has added 5 cases to some others already known of communication between the ovary and Fallopian tube, and of the evacuation of the fluid by this means.² We have therefore still less hope from this mode of natural termination or its imitation than from torsion of the pedicle.

Inflammation may attack the internal membrane of the cyst making the contents purulent, or it may extend from the sac to the entire ovary and be propagated to the peritoneum, determining adhesions or suppuration. Whether spontaneous or excited by a puncture, injection of iodine, a seton, &c., as has too often happened, it is soon fatal. Recovery after such an accident is quite exceptional. *Exhaustion* is the usual termination; most frequently, the progress of the tumour alone suffices to cause a daily increasing emaciation, exciting a hectic fever which consumes the strength of the patient, throwing her into a state of marasmus quickly followed by death. The physician therefore has to do with a tumour which may be developed at any age, making continuous and usually rapid progress and resisting all treatment, whilst occupying an organ the preservation of which is not necessary to life and the ablation of which is the only means of obtaining definite cure.

We shall now compare the various means of *surgical treatment*, some of which (puncture, aspiration, injection, drainage, seton, incision, excision) usually only procure a palliation of the evil whilst seriously endangering life, whilst others, on the contrary (extirpation), without being really more dangerous, offer the hope of radical cure.

I. *Puncture*.—This is a purely palliative means which alleviates the patient temporarily when threatened with asphyxia and helps the diagnosis. But this operation, although apparently simple, is not free from danger. Death may occur instantaneously from syncope or hæmorrhage, or at a later period from peritonitis or from inflammation of the sac and suppuration in the cyst, or from the rapid reproduction of the fluid. Puncture ought therefore to be deferred as long as possible, as it is evident that additional punctures will probably be necessary at increasingly shortened intervals, the patient at last succumbing to exhaustion.³ When it has been decided on we must make sure that the patient is not pregnant and that there is no urine in the bladder. This operation is usually performed with a large trocar on account of the consistency and viscosity of the fluid. It is usually made on the abdomen, on the *linea alba*, in the centre of the space separating the umbilicus from the pubis: at that point there is no fear of encountering the vessels of the abdominal walls and still less chance of opening one of the large arteries which rise from the base of the cyst and ramify in it. It must be previously ascertained by auscultation.

¹ *Sur les kystes tubo-ovariques* (Mém. de la Soc. de chirurg., 1853, t. iii, p. 121).

² Nepveu (*Ann. de Gynéc.*, t. iv, p. 14, juillet, 1875).—Bryzan (*Dissertat. inaugurale*. Halle, 1875).

³ Vast (*Soc. de chirurg.*, 1875).—Bézard (*Bulletin de la Soc. méd. d'émulation*, 1815. *Revue de Hayem*, vi, 168).

tion that there is no vascular souffle at this point. Care should be taken to compress the abdomen strongly when the fluid is evacuated, either by means of my belt or by that of Bourjeaud. If hæmorrhage occurs it should be arrested by means of acupressure, applied according to Simpson's¹ ingenious method. The cannula invented by Panas may be used in puncturing ovarian cysts in order to avoid accidents from hæmorrhage and from the escape of liquid into the peritoneum.

II. *Aspiration*.—Buys² has recently proposed sustained aspiration in order to provoke the continuous discharge of fluid and retraction of the cyst whilst preventing the entrance of air and the development of inflammation and suppuration in the sac, these accidents having led to the abandonment of the plan of leaving a cannula in the wound. In place of aspirating the fluid suddenly and only at intervals, as can be done by means of the instruments invented by Monro, Guérin, and Boinet, it should, according to Buys, be aspirated slowly but continuously and with increasing force so as : 1st, to evacuate the tumour slowly and prevent the patient from being inconvenienced by a too sudden raptus ; 2ndly, to maintain the vacuity of the cyst by a more energetic suction, aspirating each drop of serum as soon as it is formed and thus exciting contraction of the sac ; 3rdly, to stimulate the retraction of the cyst, producing an exudation of plastic lymph fitted to make the opposite surfaces of its internal wall adhere together. It is useless to describe the *trocar à curseur*, or the sort of india-rubber bags of different degrees of thickness invented by this surgeon to increase the strength of aspiration gradually, experience not having yet decided as to the value of this method.

III. *Barth's cannula*.—A cannula for perforating the abdomen and cyst at two points so as to remain there without allowing the sac to become separated from the abdominal wall, was first proposed by Barth,³ and was the subject of the academic discussion on ovarian cysts and of Bauchet's paper. The simple *seton* and Chassaignac's⁴ *drainage* are only different ways of carrying out the same method, and can none of them be applied without risking the danger of the entrance of air, inflammation of the sac, destructive suppuration, &c. I think that in the small number of cases in which they have been employed they have always been followed by death.

IV. *Iodine injections*.—Iodine injections preceded and followed by other injections (gas, hot wine,⁵ solution of nitrate of silver, weak solution of caustic potash or tincture of cantharides,⁶ or an alkaline

¹ *Acupressure, a New Method of Arresting Surgical Hæmorrhage and of Accelerating the Healing of Wounds*. Edinburgh, 1864.

² *Journal de médecine et de chirurgie*, t. xl, 33. Bruxelles, 1865.—*Traitément des kystes de l'ovaire, du pyothorax, de l'hydrothorax, des plaies, &c., par la compression et l'aspiration continues, procédés et appareils nouveaux*, by Buys. Bruxelles, 1870.

³ *Bulletin de l'Acad. de méd.*, xxi, 583. Paris, 1855-6.

⁴ *Soc. de chirurg.*, 27 Nov., 1861.

⁵ Holscher, *Archiv*, 1838, i, 224.

⁶ Ollenroth, *London Med. Gaz.*, 1835.

sulphite¹), have been employed and recommended by Boinet.² But iodine injections can only be attempted with any chance of success in the case of unilocular cysts containing a serous fluid, and success even then is so doubtful that Boinet himself seems to be converted to ovariectomy.

V. *Incision and excision*.—These are still less acceptable methods; their object usually is to provoke suppuration of the cyst and that is enough to condemn them. It is evident that before incising the cyst, adhesions should be established by only incising as far as the peritoneum, as advised by Graves in 1827 for abscesses of the liver, and by Begin³ in 1830 for all fluid collections in the abdomen, or by making successive cauterisations of the walls of the abdomen and cyst as performed by Récamier in the same circumstances. Supposing, however, that inflammation and suppuration are not developed in the cyst and that we may hope for amelioration and contraction of the sac, we must never count on a definite cure as long as there is a fistulous opening. The excision of a portion of the walls of the cyst, the object of which is to allow the contents to be evacuated into the peritoneum in order to be reabsorbed, or rather to provoke suppuration there, is an almost necessarily fatal operation; therefore it has only been performed in cases in which extirpation has been undertaken and could not be finished, owing to the adhesions being too strong or too numerous.

VI. *Enucleation*.—Miner of Buffalo (*Americ. Journ. of Med. Science*, October, 1872) proposed ovariectomy by enucleation, without clamp, ligature or cauterisation, a method which he had been led to adopt by chance (Hayem, *Revue des Sciences méd.*, i, 200). He performed it thrice without hæmorrhage, but he lost two patients. Meade, of Bradford, has published a successful case, and Gaillard Thomas three. Enucleation has also been performed by Logan and Ford (Hayem, *id.*, 1873, p. 748), and by Burnham (*id.*, *id.*). It is certainly very wonderful to be able by one simple dissection, one detachment gradually effected, to enucleate a cyst entirely without having to cut the pedicle or to ligature any vessel. This operation is probably only practicable for cysts of the broad ligament (Rosenmüller's organ or others), enclosed between the two layers of this great peritoneal fold, without pedicle and without vascular connections, and should not be attempted in the case of other tumours. If the cyst upon which we intend to operate by enucleation has a pedicle, and if hæmorrhage occurs it should be arrested by one of the means which I shall describe when treating of ovariectomy.

VII. *Ovariectomy*.—However serious this operation may appear, it is now so well managed that in spite of the gravity imparted to it by the size and connections of the tumour, and in spite of other unforeseen dangers, it takes an increasingly important place among surgical

¹ Gritti, *Annali universali di medicina*, 1864, p. 272.

² Iodothérapie, ou de l'emploi médico-chirurgical de l'iode et de ses composés, 2^e édit., p. 531. Paris, 1865.

³ *Journal hebdom. de méd.*, i, 417. Paris, 1830.

operations. In comparing ovariectomy with the other major operations we find by statistics that the rate of mortality is lower than in operations for strangulated hernia, than in lithotomy in the adult, ligature of the subclavian, &c.; *i.e.* than in all the great surgical operations indicated and performed daily for incurable lesions for which they afford the only chance of recovery to the patient. The comparison would not be justifiable if ovarian tumours were curable by less dangerous operations; but with the exception of a few cases which may be treated by puncture or iodine injections, ovarian cysts, especially those that are multilocular and complicated by the presence of solid tumours, are necessarily fatal within a variable but short period. Death is advanced rather than retarded by punctures and iodine injections. Extirpation therefore is the only chance of safety for patients. Not only is the rate of mortality greatly diminished, but *peritonitis*, the accident most to be feared, has become much rarer, experience having proved that extensive wounds of the peritoneum are not necessarily fatal. It is more than forty years ago since Blundell, in a paper printed in his *Physiological Researches*, tried to prove that the danger of peritonitis consecutive to local lesions was exaggerated, and he appealed from the opinion of his contemporaries to that of posterity. When we consider the large wounds made by MacDowel, Walne, Clay, Kœberlé, Péan and others, in order to allow of large tumours being extracted from the abdominal cavity without previous puncture, we cannot doubt the comparative tolerance of the peritoneum for long incisions. It is true that we regard the reduced size of the incisions as a progress; but the incision itself does not seem to have a direct influence on the development of peritonitis. Spencer Wells has recently proved by his remarkable success, not only that peritonitis is not necessarily developed after operation, but further, that pre-existing peritonitis or even the complication of pregnancy, do not necessarily contra-indicate ovariectomy when performed by a skilful surgeon. However exceptional this success may be it is too remarkable not to be recorded here.¹

We have now to consider the question of the *indications* and *contra-indications* for ovariectomy.

1. The *indications* become increasingly easy to determine. In this respect there are tumours which may be left to themselves; there are some which may be treated by puncture or iodine injections; and others which should be extirpated; whilst there are some which the surgeon should leave alone for fear of compromising surgery by undertaking impossible operations. It is right to remark that neither puncture nor injections on the one hand nor ovariectomy on the other ought to be applied to the treatment of all ovarian cysts indiscriminately, and it would be wrong to compare the results of the one

¹ Case.—*Ovariectomy performed successfully in the fourth month of pregnancy after rupture of the cyst and peritonitis* (the *Lancet*, Sept. 18, 1869.—*Lyon médical*, 7 Nov., 1869). There are several other cases on record of ovariectomy performed during pregnancy (*Annales de Gynécologie*, viii, 153. Paris, 1877. p. 1280).

method with the other as an exclusive method. It appears to me on the contrary rational to make a distinction between the cysts to which puncture or iodine injections *may* be applied, and those which *require* extirpation.—Puncture and iodine injections may be very successful in simple serous unilocular cysts, only exceptionally developing formidable and fatal symptoms. If applied, on the contrary, to viscous, purulent, complex, multilocular cysts they cannot ameliorate and usually develop rapidly fatal symptoms.—Applied to cysts of the first class ovariectomy is very frequently successful; but it is not indispensable, and as it may be followed by formidable accidents inherent to the method itself, it should be reserved for more serious cases. Applied, on the contrary, to cysts of the second class, or to those of the first which have passed into the second from the ineffectual use of punctures and injections, it is doubly superior to puncture and injection because it then becomes a rational means of treatment, and besides is the only means of cure for a malady which puncture and injection could only increase and render rapidly fatal.

Therefore, on the one hand puncture and injections may be attempted in cysts of the first kind, because they may be curative means or at least sufficiently palliative, while their failure would not absolutely prevent the application of the radical method of extirpation, although lessening the chances of cure. On the other hand ovariectomy is the only practicable method for cysts of the second class, to which puncture is only applicable as an exploratory means. Such is, according to my opinion, the limit between the indication and contra-indication of punctures or iodine injections, and such is the limit between the contra-indication and the indication for ovariectomy.

2. As for the *contra-indications* for ovariectomy there are some which may be drawn from the age and strength, or on the contrary from the extreme debility of patients; but these are not only common to ovariectomy but to all operations of equal gravity. They are not of less consequence on that account: for experience proves that the danger of death after ovariectomy depends more on the general state of health than on complications of the malady, such as the size of the tumour, adhesions and difficulties attending the operation.¹ Nevertheless, I shall only occupy myself with the special contra-indications connected with the operation itself. One of these is the existence of solid constituents and especially cancer in the tumour, which may make pediculisation of the latter impossible or relapse likely; hence the utter inutility of the operation in such cases. I know that Kœberlé has set an example which might be followed by removing the uterus as well as the ovaries and so making pediculisation of the tumour absolutely possible. Some day we shall perhaps enter on the path opened up by Atlee and Clay for the extirpation of utero-peritoneal fibrous tumours. These

¹ Spencer Wells, *Fifty Cases of Ovariectomy*, second series. London, 1867; from the *Medico-Chirurgical Transactions*, 1865.

cases, however, are too exceptional to authorise our introducing into practice precepts contrary to those which I think should form the basis of these contra-indications for ovariectomy.

Another contra-indication is the number, extent and solidity of adhesions (especially in multilocular cysts), either with the abdominal wall or viscera, especially with those which are high up, such as the stomach, liver, &c. I saw with Simpson a girl of 15 affected with an enormous multilocular cyst, with viscous greenish-grey contents, the puncture of which, after several sacs had been evacuated, did not determine retraction at any point, from the epigastrium to the pubis or from one flank to the other. It seemed imprudent to attempt the extirpation of such a tumour, the adhesions of which were so strong and so extensive, and yet the operation was performed by Keith with complete success. Such adhesions, with the existence of solid tumours, as well as errors of diagnosis may account for the operations which were undertaken by some of the first ovariectomists, but which could not be terminated.

Lastly, after having endeavoured to arrive at the most probable diagnosis by all ordinary means, especially by puncture, we may attempt to convert this probability into certainty by an *exploratory incision*; for experience proves that, when carefully done, this incision does not greatly increase the chances of death. Supposing that this last element of diagnosis is in favour of operation the latter is in such a case already begun, and the surgeon has only to continue it.

Preparatory treatment was considered a few years ago to have more influence on the success of the operation than is now admitted. This influence, however, although indirect is not the less real, and when the operation can be delayed I think the preceding time should be taken advantage of for putting the patient into the best possible conditions. The best means for preventing the most dangerous accidents attending ovariectomy, such as hæmorrhage, debility, suppuration and purulent or putrid infection are: strengthening and nourishing diet; residence in a bracing climate, baths followed by frictions and other hygienic measures; to which we may also add the use of iron and other tonics. Simpson attached great value to the latter agent in preparing patients for operations, and preferred the tincture of the perchloride. The use of iron preparations should not be reserved for the days previous to operation; it is quite as useful after ovariectomy. Like all other serious operations the extirpation of ovarian cysts should be performed when menstrual congestion has entirely passed, *i.e.* about eight days after the cessation of the monthly period. Although Kœberlé performed an operation during the catamenial period and succeeded, that is no reason for admitting that there is not more danger in performing ovariectomy then than at another time. In order that the intestines may have rest after ovariectomy, it is useful to empty them not only by an enema but also by a mild purgative given the day previous to operation. I agree with Kœberlé in preferring an ounce of castor oil, mixed with an ounce of syrup of tartaric acid, followed in the evening by 30 to 60 grains of

subnitrate of bismuth, in order to decompose the sulphurous gases remaining in the digestive canal.

The first operations having been performed before the discovery of anæsthetics, the patients were not able to have the benefit of such relief. But since its introduction into surgery no operator has failed to employ it before proceeding to the extirpation of ovarian cysts. We should remember that the opening of a large cavity like the abdomen and its prolonged exposure to the air have a tendency to chill the body considerably: therefore the chest and lower limbs should be covered with warm flannel.

The operation strictly speaking is divided into six stages: abdominal section; puncture and evacuation of the cyst; rupture of adhesions and extraction of the ovary; constriction and section of the pedicle; cleansing of the abdominal and pelvic cavities; closing of the wound.

1. *Abdominal section* (including that of the teguments and peritoneum) is always made on the *linea alba*. An incision of 4 or 5 inches at equal distances from the umbilicus and pubis suffices as an explora-

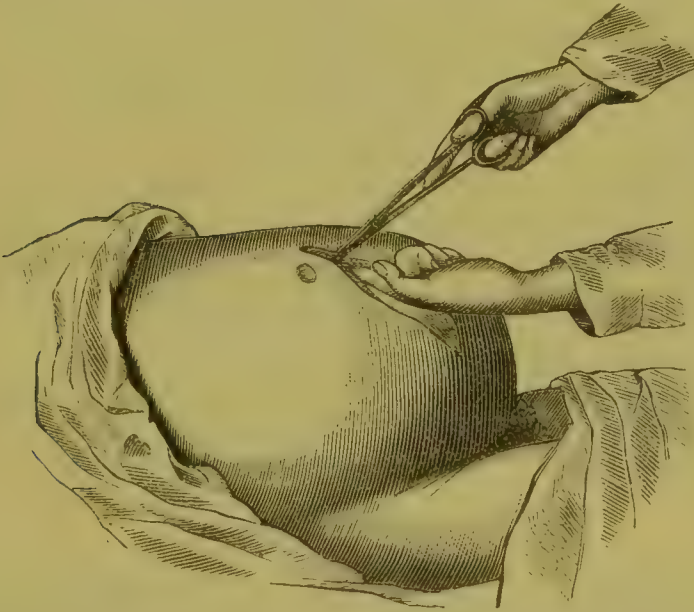


FIG. 412.—Incision in the direction of the linea alba without touching the peritoneum, enlarged with scissors guided by the index finger or the director (after Savage, as well as the following figures relating to ovariectomy).

tory incision, and it can be increased when necessary. If circumstances require its being extended beyond the umbilicus care should be taken to direct it to the left so as to avoid the navel. In such cases Kœberlé incises the umbilicus directly, and if there is an umbilical hernia he incises the sac at the same time to obtain a radical cure.

When the peritoneum is reached the incision presents some difficulty. The wound should be kept dry by sponging and by seizing with artery forceps the veins, which are sometimes very much developed, and which may give rise to profuse hæmorrhage. Next it is important to distinguish the peritoneum from the wall of the cyst.

The serous membrane is raised with a tenaculum hook or mouse-toothed forceps, and a small opening is made through which an ordi-



FIG. 413.—Manner of opening the peritoneum, which is incised in the same direction and to the same extent as the teguments.

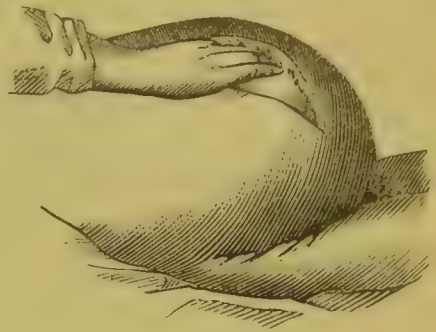


FIG. 414.—The operator, by passing his hand round in various directions between the tumour and the peritoneum, assures himself of the extent and nature of the adhesions if there are any.

nary director or the index finger can pass from above downwards, the serous membrane being divided by passing a bistoury or scissors along the director so as to give the same extent to this incision as to that of the teguments.

2. *Puncture (preceded by separation of adhesions) and evacuation of the cyst (preventing at the same time the escape of the fluid into the peritoneal cavity)* constitute the second part of the operation. Before performing these the hand should be passed between the abdominal wall and the cyst to ensure there being no adhesions, any slight ones which may exist being ruptured by the finger. The nature of the tumour is verified at the same time, as well as the relative size of the cysts composing it, as the largest and the one which should be punctured first may not be directly opposite the abdominal opening.

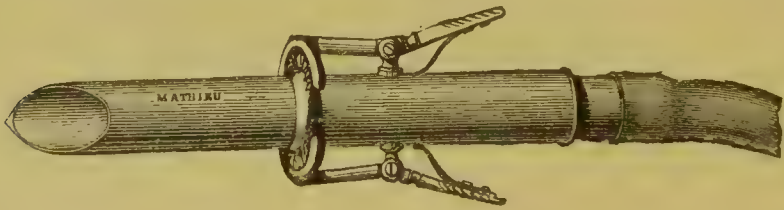


FIG. 415.—Spencer Wells's ingenious trocar in the form of a wide tube, bevelled off at one of its extremities into a very sharp point which makes the puncture; towards its central part there is a circular and notched catch, into which fit two strong semicircular claws, which retain the cyst on a level with the puncture; the other extremity is furnished with a raised border, to which a large india-rubber tube can be fastened, allowing of the rapid evacuation of the fluid without its escaping externally.

We should, however, beware of using much force in separating adhesions, especially if there is reason to suppose that the wall of the cyst is thin, as there would be a risk of rupturing it and of determining evacuation of the whole of the fluid into the abdominal cavity.

After this exploration has been made the cyst is punctured. The best instrument for the purpose is Spencer Wells's trocar, the point of which is hollowed out into a tube, like the cannula, and may be contained within the latter, or project beyond it according to the wish of the operator, and the cannula of which itself holds a secondary cannula, soldered on to it at right angles and furnished with an india-rubber drainage tube, at the extremity of which is a weight, directing it into a tub placed on the right-hand side of the bed ready to receive the fluid from the cyst. The instrument has a sufficient diameter to allow of the fluid, which is usually thick and viscous, being discharged without difficulty. As the cyst is emptied care should be taken to keep the edges closely applied to the cannula of the trocar, lest the contents should escape into the abdomen. Evacuation of the fluid is then completed without further precaution; any other secondary cyst or chamber, which is too much distended to

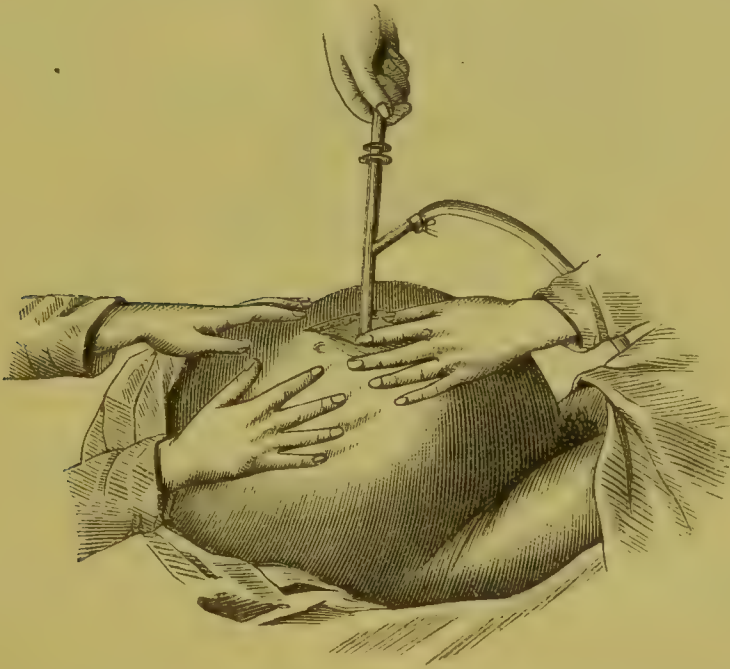


FIG. 416.—Puncture of the tumour by means of the trocar and syphon cannula.

allow of the passage of the tumour through the abdominal orifice, is punctured in the same manner, and in this way (unless there are solid tumours or a considerable agglomeration of small cysts) we are able to make the ovary supple and mobile enough to allow of its passing, when drawn carefully little by little, through the abdominal opening. If this evacuation is too slow it is better to enlarge the opening of the sac and even the abdominal incision with the bistoury, in order to facilitate the escape of the cyst, than to lose time and run the risk of hæmorrhage by puncturing the secondary cysts.

3. *Extraction of the cyst (assisted by raising the cyst and breaking*

up secondary cysts," and especially by the rupture of adhesions) may be very simple or very complicated. The breaking up of secondary cysts and the raising of the tumour do not present serious difficulties, but it is different with regard to adhesions. When adhesions do not exist or are few and unresisting, extraction of the cysts is playwork. When, on the contrary, they are numerous and resistant this part of the operation may become dangerous, necessitating manœuvres which may afterwards determine serious accidents compromising the success of the operation. When I have finished the description of the operation I shall speak of the conditions which may make it impossible for the surgeon to terminate it; but for the present I take for granted that it can be accomplished. This result is obtained more frequently than formerly, as the operator does not now allow himself to be discouraged by the existence even of very firm adhesions except that he leaves

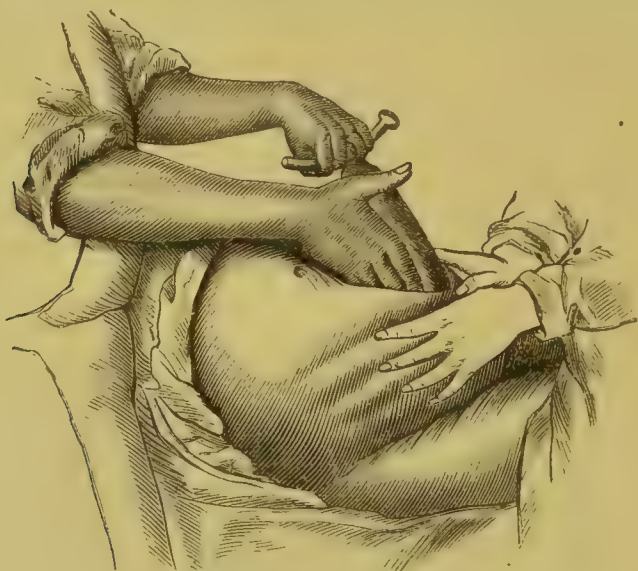


FIG. 417.—Method of preventing the escape of the fluid into the abdominal cavity from the opening made by the trocar. An assistant with both hands aids the withdrawal of the cyst.

portions of the cyst on the organs to which they adhere. Experience has proved that success may be obtained even in apparently very unfavorable circumstances. But great precautions should be taken in the rupture or dissection of these adhesions, not only of those which unite the cyst to the abdominal wall and epiploon, but especially of those which unite it to the intestines, stomach, liver, spleen, or pelvic cavity, to the uterus, other ovary, bladder, &c. We not only run the risk of injuring these organs, and in such a case it is better to leave a portion of the cyst, which should be cut off round the adhesion, making it as thin as possible; but we also risk causing hæmorrhage, and this is why we should try to staunch the blood, tying all the divided vessels which threaten a secondary hæmorrhage, either on the epiploon, where this most frequently occurs, or elsewhere. Sometimes we must first of all search for the pedicle,

and ligature it if possible before destroying the adhesions in order to stop the hæmorrhage. After having succeeded by this manœuvre



FIG. 418.—The operator is obliged to complete the withdrawal of the cyst by the introduction of the other hand below, with which he raises the cyst.

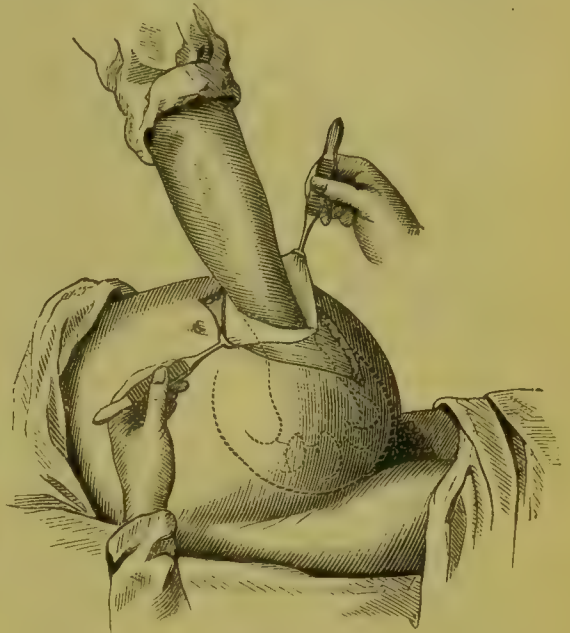


FIG. 419.—The operator reduces the size of a multilocular cyst incompletely evacuated by breaking up the remaining cysts with his hand, which he introduces into the interior, keeping hold at the same time of the borders so that the fluid cannot escape into the peritoneum.

in isolating the whole of the cyst, or in removing successively the various fragments of the tumour which are detached (of which I have given examples), the rest of the tumour is drawn outside the abdominal opening, which can be enlarged when necessary, and the pedicle is seized firmly. At this difficult and dangerous period of the operation we must not fear to give the necessary time required. The gravity of ovariectomy is always in proportion to the complications that it presents, and the best means of diminishing the influence of these complications is the use of the most effectual methods; now, rupture of adhesions and hemostasis after this rupture, either by momentary compression (by artery forceps) or by astringents (alcohol, perchloride of iron, &c.), by the cautery, or by metallic, silk, or catgut ligature, are necessary proceedings to prevent troublesome results from these local complications. The actual cautery and the short ligature are the most certain hemostatics.

4. The fourth part of the operation is *the constriction and section of the pedicle* which varies according to whether the pedicle is retained in the angle of the wound or is returned to the pelvic cavity. It may be that we have no choice as to the various methods successively employed to attain this end, and if the pedicle is short, or if it cannot be lengthened artificially by applying constriction to the base of the cyst

when firmly folded in place of applying it to the utero-tubo-ovarian pedicle, it is necessary to employ one of the means which I shall describe. At first it was thought better to keep the pedicle attached to the abdominal wound and as much as possible outside this wound, in order to avoid suppuration in the pelvic cavity. Although Tyler Smith's success seemed to remove all ground for exaggerated fears on this point Langenbeck was the first who laid down and applied this precept.

One suture may be passed at once through the pedicle and the two lips of the lower angle of the wound, or the pedicle may be retained at this point by a strong needle or it may simply be compressed against one of the lips of the wound or against the neighbouring portion of the abdominal wall (when it is too short), by means of the ingenious method of acupressure invented by Simpson.¹ But the *clamp* or *clipper* invented by Hutchinson in 1838 is preferable. Kœberlé also has a clamp, but he prefers his *serre-nœuds*. The most convenient of these instruments is one which I have seen Spencer Wells use. Constriction should be made carefully, not only to prevent consecutive hæmorrhage but also because tetanus has been occasionally developed from incomplete constriction of the pedicle. Cases of death from tetanus have occurred after ovariotomy. (*Annales de Gynécologie*, t. xi, p. 231.)

Whatever method be employed, all that remains to be done to complete the extraction of the cyst is to cut the corresponding portion of the pedicle, at five or six millimetres from the constriction.

When the pedicle is very short and cannot be drawn into the lower angle of the wound on a level with the integument without considerably twisting or dragging the uterus it has necessarily to be left at a more or less considerable depth. If it is thin, if it can be compressed by a thread in one or two ligatures, and if it can be cut close to the

thread, I see no reason against imitating Tyler Smith and letting it fall back into the pelvis, except in those cases in which the

¹ *Acupressure, a New Method of Arresting Surgical Hæmorrhage, &c.* Edinburgh, 1861.

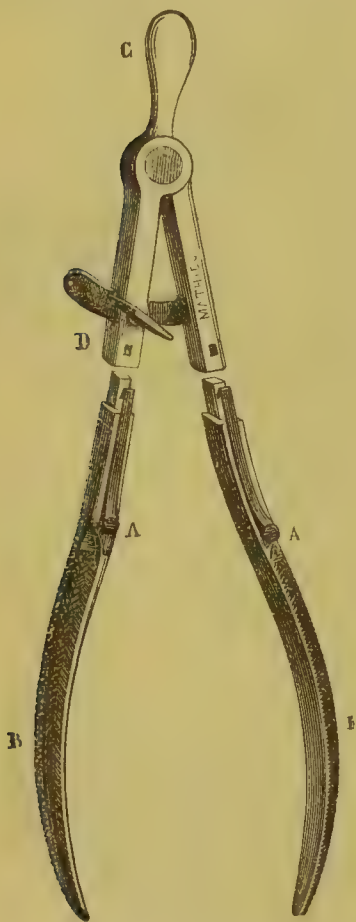


FIG. 420.—Clamp, the handles of which may be removed by the catches, A A. It resembles that of Spencer Wells, except in the absence of the small triangular blade which restores the parallelism of the branches when they are close together.

rupture of numerous adhesions may lead us to fear the establishment of suppuration. In the contrary case, especially if it is necessary to apply more than one ligature, or to extirpate both ovaries and therefore to multiply the ligatures, I think it is better to keep the threads in the lower angle of the wound, stretching them by means of an india-rubber catheter or director passed through the loops of the various ligatures and resting across the wound so as to retain them with more or less force against the teguments, or to maintain constriction of the pedicle by means of a *serre-nœud* as Kœberlé does.¹ This surgeon interposes between the lower portion of the lips of the abdominal incision two valves of lead, intended to prevent the occlusion of the wound before the end of suppuration, to keep open a kind of drain for promoting the escape of fluid and pus, and to isolate this from the rest of the abdominal cavity, and especially from the rest of the wound. Section of the pedicle by the *écraseur* has even been proposed which would facilitate union of the wound and prevent the drawback of leaving the ligature of the pedicle in its lower angle; but I confess that I should be too much afraid of secondary hæmorrhage from the arteries of the pedicle to venture to prefer this means to those just described, or to section of the pedicle by the cautery, or to its return to the pelvis with a short ligature. Netzel, of Stockholm, who has employed the clamp forty-seven times, and cauterisation eight times, as



FIG. 421.—Tumour, just withdrawn, is held by an assistant so as to prevent laceration of the pedicle, whilst the operator compresses it in a metallic clamp and divides the pedicle with the actual cautery.

well as the silk ligature left in the pelvic cavity with the stump of the pedicle, prefers the latter method (*Annales de Gynécologie*, t. ix, p. 464). Terrier once found in a patient who died two years after ovari-

¹ Ligature of the pedicle in one or two masses separated by double iron wire by means of Kœberlé's little *serre-nœud* may be adopted as a general method.

otomy, two silver sutures, which could not be removed at the time of the operation. They were discovered in the midst of the cellular adipose tissue dragged to the side of the peritoneal cavity by the retraction of the epiploon, not encysted, slightly blackened by the sulphide of silver, surrounded on every side by adipose cellular tissue and perfectly tolerated, a fact which authorises our giving the preference to the short ligature (*Annales de Gynécologie*, t. vii, p. 459). Alban Doran has seen exudations of plastic lymph surrounding and isolating the pedicle in a woman of 37 who died of septicæmia six days after ovariectomy, whilst in another woman operated on by Bantock the hempen thread had disappeared seven months after the operation and the pedicle had contracted adhesions with the epiploon and the broad ligament (*St. Bartholomew's Hospital Reports*, vol. xiii, p. 195, 1877). Now that antiseptic precautions are taken the clamp is seldom used, the pedicle being returned to the pelvis after having been compressed by a strong ligature which is cut close to the section of the pedicle, or cauterised with the actual cautery whilst constriction is maintained by means of Baker-Brown's clamp. This latter method is chiefly employed when the pedicle is short and broad, and has often been used by Baker-Brown, Krassowsky, Péan, and Kœberlé. In order to liberate the pedicle after it has been cauterised the clamp should be loosened slowly and without shaking, so as to avoid lacerating the walls of the compressed vessels. The short ligature may be of catgut, silk, or metal, single or multiple, according to the size of the pedicle.

The other ovary should then be examined and should be extirpated if it is found to be the seat of commencing disease. At other times it is plain from the beginning that the case is one for *double ovariectomy*. Winkler of Dresden has even had to perform a *triple ovariectomy* necessitated by the presence of a supernumerary ovary also the seat of a cyst (*Ann. de Gynécologie*, t. xi, p. 74).

5. *Cleansing of the abdominal and pelvic cavities*.—If blood, cystic fluid, clots or fragments of the tumour are still found in the peritoneal cavity they should be removed most scrupulously. English surgeons rightly ascribe a great deal of their success to this precaution. There need be no fear of introducing the hand several times into the pelvic cavity and of afterwards applying thoroughly clean sponges, in order to ensure the peritoneum being perfectly dry, and by sufficient delay or the application of fresh ligatures to prevent consecutive hæmorrhage. It is however right to mention that Kœberlé is not so strict with regard to the cleansing of the peritoneum; he uses soft napkins and hot flannels in preference to sponges.

6. The last part of the operation is *union of the lips of the wound*, which should take place if possible by first intention. Care is taken to replace the epiploon and intestines into the abdominal cavity if they have escaped. (During the operation an assistant is entrusted with the task of pushing them back with hot wet flannels whenever they present themselves at the upper angle of the wound.) The pedicle, well compressed and cauterised, is either left in the pelvic cavity or else maintained by the clamp in the lower angle, the lips of the wound are then

seized and the suture applied in superimposed layers, *i.e.* a deep and a superficial suture. Kœberlé used to employ the quilled suture for the deep suture, but now contents himself with the interrupted suture not involving the peritoneum. The simple zigzag suture may also be used after the manner of the English surgeons. Spencer Wells, who only leaves the sutures in place for the few days necessary for union, merely uses ordinary strong thread. The ends of each suture are passed through the eyes of two needles and he then pushes each needle alternately from the peritoneum (at five or six millimetres from the incision) to the skin (at the distance of about from two to three centimetres from the wound), he then secures the two ends on the line of union. The sutures are placed at the distance of two centimetres apart,

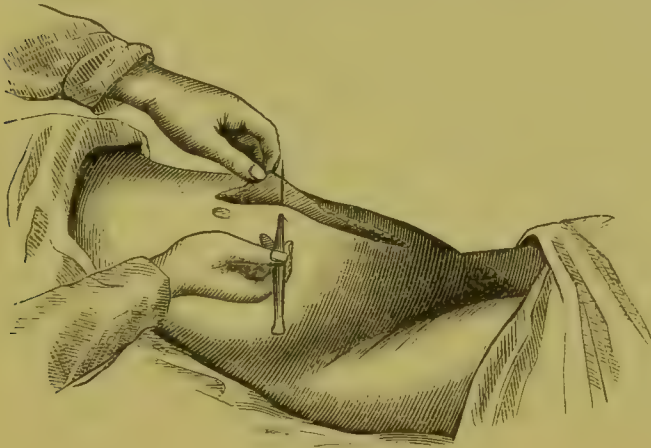


FIG. 422.

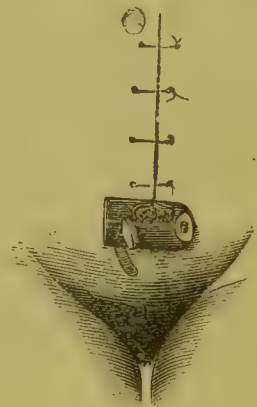


FIG. 423.

FIG. 422.—The method of passing the needle for the metallic suture, including the peritoneum.

FIG. 423.—Wound closed, edges united, pedicle secured by a permanent clamp.

and in the intervals a few superficial sutures are passed. The last deep suture passes close to the clamp so as to retain the pedicle in place without piercing it. The other London surgeons whom I have seen operate do not pierce the peritoneum and make use of silver sutures. Simpson employed iron wire, which he left indefinitely in the wound. Like Spencer Wells, Simpson and Keith included the peritoneum in the suture, and I have always done the same. Since 1874 Kœberlé leaves the peritoneum, only piercing the fibrous tissues by a deep interrupted suture, the ends of which directly cross the wound, and he uses a harelip suture to unite the skin. The pins of this harelip suture only remain in place for twenty-four hours and are then replaced (with the exception of the last which remains) by a dry collodion suture which remains solid for four weeks. The deep sutures fall from the eighth to the fifteenth day.

We have now to speak of the *immediate results* of ovariectomy as regards the operation and the means for preventing or overcoming accidents. The knowledge of these means is all the more important, as all ovariectomists agree in thinking that it is to the after-treatment, in a great measure, that the success of the operation is due. *Acci-*

dents may occur even during operation. Nussbaum once divided the right ureter; Simon and Tauffer of Fribourg the left ureter (*Annales de Gynéc.*, vii, 466. Paris, 1877). Nussbaum made an artificial ureter, Tauffer sutured the upper border of the bladder, and the patient recovered; Simon performed nephrotomy successfully. Chambers wounded the intestine and cured it by a continued suture two inches in length; in another case of intestinal wound he was equally successful (*Lancet*, 1877, p. 312). Lyon (*Glasgow Med. Journ.*, 1868) has seen an abnormal anus formed after an intestinal wound which in spite of energetic treatment was not cured at the end of a year. Keith (*Glasgow Med. Journ.*, 1869, No. 2) has seen an intestinal fistula originating in the same way and persisting after twenty-five months. Spencer Wells (id., No. 86), Atlee (*American Journ. of Med. Science*, 1872), and Hennig (*Archiv für Gynaec.*, iii, 287) have observed analogous cases. Heath (*Lancet*, 1871, Nos. 4 and 11) has seen an abnormal anus follow an intestinal wound made directly with scissors. Elischer (*Centralblatt f. Gynaecol.*, 1877, p. 204) has observed an analogous case: the wound was sutured, cure following immediately. Péan has twice wounded the intestine: in such cases the wound should be united with sutures of carbolised catgut, and this portion of the intestine must be retained near the lower angle of the wound, as in Chambers's case. If the bladder is injured the edges should be sewed together and a catheter left in the urethra. This accident happened to Lauffer once and the patient recovered; to Péan once, his patient also recovered; once to Henry Smith, when the accident ended fatally; twice to Spencer Wells, one patient recovered, the other died; three times to Thornton, in two cases recovery was rapid, the other patient died; once to Bantok, the patient died; once to Eustache, when the patient recovered (Eustache, *De la lésion des organes urinaires pendant l'opération de l'ovariotomie. Journ. des Sciences méd. de Lille*, 1880).

The most formidable accidents after operation are: shock, exhaustion, hæmorrhage, accumulation of pus, purulent infection, and lastly peritonitis, which according to some surgeons is the most frequent accident, whilst Spencer Wells, on the contrary, thinks it rarer than either purulent or putrid fever, or exhaustion. According to Marion Sims septicæmia is the most frequent cause of death; therefore he advises perforation of Douglas's cul-de-sac and Lister's antiseptic dressings.

Anæsthesia is one of the best means of preventing shock; when it occurs the patient should be covered with flannel and have hot-water bottles placed at the extremities to warm her; anti-spasmodics may be administered when necessary, or stimulants, such as wine, brandy, carbonate of ammonia. Exhaustion should be prevented by perfect rest and by giving small quantities of beef tea and wine, as well as tonics, remembering that the risk of hæmorrhage and peritoneal inflammation requires us to prescribe a somewhat strict diet for some days in order to give absolute rest to the digestive canal. Tyler Smith carries precautions so far as to leave a catheter in the bladder in order to avoid the movements necessitated by micturition. Uterine and in-

testinal cramp, hiccough and vomiting may be developed, placing patients in danger by rupturing sutures, and the same may be said of tympanitis. They should be soothed by means of chloroform or other anæsthetics, and antispasmodics. In order to prevent the fluxionary abdominal movements, which may determine hæmorrhage, or the development of peritonitis, Kœberlé applies ice to the abdomen in two bladders placed one on each side of the wound for a few days. I have never seen this precaution used by English surgeons, and their patients do not succumb any oftener than others to the accidents which the continuous application of ice seems fitted to prevent. It is of great importance to ensure rest to the intestines and to prevent all movement and dragging in the belly which could draw down the pedicle, rupture the healthy adhesions established in the wound, or by repeated displacements of the organs produce hæmorrhage or peritonitis. This condition is fulfilled by covering the abdomen with cotton wool and a bandage, which maintains it in a state of absolute immobility by moderate but methodic compression. It is also fulfilled by the administration of opium or morphia. Kœberlé is in the habit of giving morphia to all his patients after operation. In England, however, narcotics are only resorted to when there is pain or sleeplessness. During the course of peritonitis it is useful to empty the stomach and to wash it out with the œsophageal sound, and to retard organic fermentation by the administration of sulphate of quinine (Kœberlé). Alcohol and opium associated with anti-emetics have been of great service to me in these circumstances.

Lastly, there is an accident which it is important to prevent or subdue, that is, suppuration of the wound itself, which may gradually produce that of the peritoneum; the accumulation of pus is not long in engendering septicæmia or pyæmia; suppuration or rather putrefaction of the pedicle mortified by constriction is sufficient by contact or absorption to produce not only inflammation of the peritoneum but purulent and putrid fever. Hence the necessity of maintaining great cleanliness of the wound by dressings repeated three times a day, by the frequent change of lint, by removing some of the sutures the first day, and others the fourth or fifth day when they are not metallic, by laying little bags filled with absorbent powders, such as calcined oyster shells and quinine, rhubarb and chalk, magnesia and cinnamon (Spencer Wells), on the parts from which fluid is oozing out; lastly, by mummification of the pedicle painted with caustic perchloride of iron (Kœberlé, Keith, Simpson), and even by irrigation of the wound and neighbouring parts which threaten to become inflamed with an aqueous solution of sulphate of iron (Kœberlé).

If in spite of these precautions pus is produced in the pelvic cavity, its accumulation should be prevented either by the introduction of a glass tube or a vulcanised caoutchouc drainage tube through the lower angle of the wound (Kœberlé), or by drainage giving exit to the pus by the posterior vaginal *cul-de-sac*¹ as performed by Spencer Wells,

¹ The drainage of the peritoneal cavity by Douglas's *cul-de-sac* has been practised by Peaslee (*Americ. Journ. of Med. Science*, 1856, 1863 and 1864).

Kœberlé, or Péan. The latter surgeon pierces the *cul-de-sac* twice from within outwards by means of a trocar, guided by the finger passed through an incision made above the crural arch, and leaves in it an india-rubber tube, the loop of which is in the retro-uterine cavity whilst the two ends hang from the vagina. As a rule, however, peritoneo-vaginal drainage has been abandoned for peritoneo-abdominal drainage which is rightly considered quite as useful and less dangerous. Fortunately the antiseptic treatment, *i.e.* the application of Lister's method to ovariectomy (during operation as well as in the dressings) by diminishing the chances of septicæmia, has given fresh guarantees of success to ovariectomy.

To sum up, the dangerous accidents of ovariectomy seem to be sanguineous oozing into the peritoneum and the accumulation of pus followed by septicæmia. We must therefore try to prevent the development of these accidents.

Keith's great success is apparently due to the application of as many hemostatic ligatures as the sanguineous oozing necessitates, to peritoneo-abdominal drainage when indicated, and to the use of Listerism, both preventive and consecutive, other circumstances being seemingly secondary to this kind of therapeutic tripod on which the operative success of ovariectomy appears to rest.¹ It is needless to add that supposing the consequences of operation have been benignant and that nothing has hindered the regular course towards cure, the quantity of food administered to the patient ought only to be increased gradually, and the permission to rise, and especially to walk, ought to be delayed as long as possible, for it should always be remembered that a certain time is required to give to recent adhesions sufficient firmness to enable them to withstand the various movements natural to women in normal health.

I have mentioned the *impossibility of terminating operation* as one of the most serious accidents of ovariectomy. This danger becomes less frequent every day. It is evident that if adhesions absolutely prevented the extraction of the cyst it would be necessary to reunite the lips of the abdominal wound and to enclose the walls of the cyst in such a way as to make them adhere to it, either by trying to obtain the obliteration of its opening, which would turn the operation into one of simple puncture, or by leaving the orifice of the cyst open, by enlarging it even, and so preserving the possibility of introducing into its cavity various alterative fluids or perchloride of iron, which would almost reduce the operation to incision of the cyst, as advised by Ledran and performed by several modern surgeons, but, according to Fock's statistics, not very successfully.

Péan has brought this method again into favour by his success in cases where he could not complete extraction: in order to succeed, it is very important to make the borders of the cyst adhere exactly to

¹ Mr. Lawson Tait has published an account of 186 cases of abdominal section he has performed since Nov., 1879, with only 14 deaths. He has entirely abandoned Lister's antiseptic treatment, considering that it is productive of more harm than good (*Paper read before the Birmingham Branch of the Brit. Med. Assoc.*, Nov. 11, 1880.—*Med. Times and Gazette*, Nov. 5, 1881.—Trans.

the edges of the abdominal wound and to prevent all communication with the peritoneal cavity. Before these surgical improvements excision of a portion of the cyst had only given poor results,¹ therefore when it is possible we should try to reduce the operation, by the exact union of the wound, to the conditions of a simple puncture.

The *remote consequences* of ovariectomy are usually as satisfactory as could be desired. Patients recover perfectly, perform all their functions and regain flesh. I have seen some who had been operated on ten years previously and who had been in perfect health ever since. Nevertheless painful sensations of dragging may persist for some time, due to the slight displacement undergone by the uterus, to the adhesion of the pedicle to the abdominal wall and to cicatrix of the ovarian ligament. I have seen patients in whom, owing to defective union of the linea alba at some point below the skin, there existed real eventration and enterocele of the linea alba, the retention of which necessitated the use of a belt or a bandage with a large pad similar to

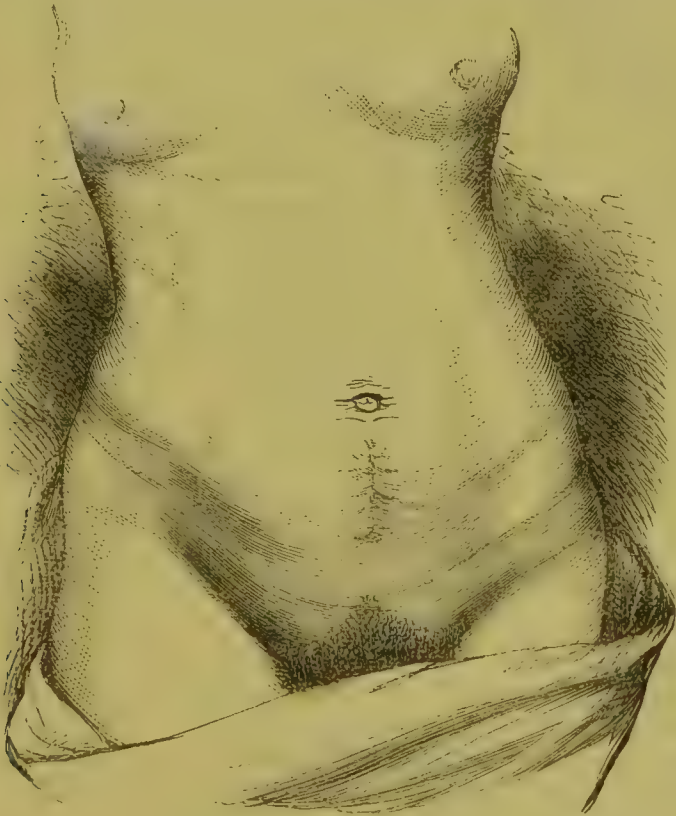


FIG. 424.—Appearance of the abdomen with cicatrix three weeks after extirpation of a small ovarian cyst without adhesions (after Spencer Wells).

the umbilical bandage. When both ovaries have been removed menstruation does not return and there is absolute sterility ; but when one only has been extirpated, menstruation returns after operation, resuming its usual course. In the latter case conception may take place and be followed by normal pregnancy.

¹ See Clay's statistics at the end of his translation of Kiwisch.

More than twenty of Spencer Wells's ¹ patients, three of Kœberlé's, and several operated on by other surgeons have become pregnant, and each time the pregnancy has terminated normally; the first patient operated on by Kœberlé (June, 1862) has had seven children since, two of which were twins. A woman operated on by Lane, who had had an abundant suppuration and phlebitis for fifteen days previously, has had five children since.

Lastly, relapse, *i.e.* development of the disease in the other ovary, has sometimes been observed. Atlee, Bird, Spencer Wells, Boinet, Joïon of Nantes have had to extirpate a second ovarian cyst some months and even years after ablation of the first in the same patient. Out of seven operations performed on the second ovary, Spencer Wells has had five successes. The integrity of the tissues corresponding with the cicatrix of the first operation was ascertained, no trace of the latter being discovered in the majority of cases. Once even, as I have already mentioned, a triple ovariectomy was successfully performed.

VIII. *Extirpation of normal ovaries*.—This operation, which is nothing else than *castration*, and which has received the name of *Batley's operation*, or that of *normal ovariectomy*, has been performed so often on various occasions that there can be no doubt as to the possibility of terminating it successfully, and of saving patients in a great number of cases. In 1863 Kœberlé performed this operation and recommended simultaneous extirpation of both ovaries and of the womb in cases of hysterectomy or supra-vaginal amputation of the uterus when attacked by fibrous tumours. Nevertheless till 1872 no gynecologist had proposed the extraction of apparently healthy ovaries (or castration) with the sole object of modifying disorders of innervation, the starting-point of which seemed to be in the organs themselves. It was at this time that Batley performed what he calls normal ovariectomy, "with the object," he says, "of producing an artificial change in the conditions of existence, and of suppressing maladies which may depend on them, such as neuralgia, dysmenorrhœa, hysteria, mental derangement," &c. According to this surgeon the indications for the operation are: "1, absence of the uterus and serious permanent disorders caused by the presence of the ovaries; 2, obliteration of the uterus and vagina beyond the possibility of restoration; 3, the exceptional gravity of nervous, hysteriform and epileptiform disorders depending on an ovarian affection and resisting all ordinary means of treatment; 4, mental and physical sufferings produced by congestion of the ovaries which have resisted all treatment" (*Transact. of the American Gynecol. Soc.*, 1876). In 1878 Batley had performed a dozen ovariectomies (two by the abdomen, the others by the vagina) with the object of curing obstinate nervous affections; in four cases there was complete cure, in six cases the result was *nil*, in the remaining two the patients died.

Another indication is uncontrollable metrorrhagia, especially dangerous catamenial hæmorrhage. Hegar of Fribourg, who, in 1876,

¹ *Gaz. méd. de Paris*, 20 Oct., 1869. Since then the number of these cases has considerably increased.

removed the ovaries of two women affected in this way, with the object of arresting the loss of blood and of putting a stop to the congestion dependent on ovulation, performed the operation by the abdomen with short ligatures, and had the satisfaction of saving his patients after having seen them pass through the greatest danger. Sims, out of seven operations by the abdomen, saved six patients; but out of four operations by the vagina for dysmenorrhœic ovarialgia, he lost all (*Dict. de méd. et de chir.*, art. OVAIRE).

If the efficacy of castration in the case of nervous affections is problematical, there is hardly any doubt as to the services this operation might render by bringing on the menopause prematurely in women affected with dangerous hæmorrhage. This is the opinion of Sims, Hegar, and of several others (*Medical Times and Gazette*, 1877). Goodell (*American Journal*, July, 1878) also performed castration for a large posterior fibroma with symptomatic menorrhagia; after eight months the hæmorrhage had ceased, the tumour had diminished to less than half its size, and the patient's health was excellent. Exceptionally, menstruation has continued after castration. Goodell mentions two cases of double normal ovariectomy in which a more or less regular and abundant discharge of blood like menstruation continued afterwards; but in seventy-eight other cases of ablation of both ovaries collected by the same writer menstruation was completely suspended. Unfortunately the operation, serious as it is by the abdomen, is still more so by the vagina on account of the adhesions and variations in the size and position of the ovaries, which have always suffered from inflammatory or other maladies when operation is indicated, and which are therefore far from being in the favorable conditions in which the same organs are when they have never been diseased. Goodell rejects Battey's expression of normal ovariectomy, preferring that of castration. Trenholme had a case (*Obstet. Journ.*, Oct., 1876) in which both ovaries were removed and the pedicles left in the abdomen, with the object of diminishing uterine fibroids, by taking from them their means of existence by the suppression of erection and of the monthly ovarian congestion which react on the whole genital economy. It is certainly very problematical; nevertheless two cases of Hegar's and one of Nussbaum's seem to justify the idea. Goodell also has performed it with the same object and operates in the following way. The vagina is depressed by a Sims's speculum whilst a fold of the mucous membrane is seized by a tenaculum hook behind the cervix. An incision of 4 centimetres is made there with Küchenmeister's scissors; the peritonæum is then divided and the index finger of the left hand being introduced, it follows the course of the Fallopian tube, hooks the two ovaries successively, seizes them with a pair of fenestrated forceps and brings them into the vagina where they are ligatured and excised. Their pedicles are firmly ligatured with antiseptic silk and replaced in the pelvic cavity. There is little hæmorrhage and no suture in the vaginal wound. In Goodell's operation which I have just mentioned the fibroid was discovered with great difficulty six months afterwards, although previously it had been

very painful and had formed one body with the uterus in acute anti-flexion. As for the other cases of dangerous hæmorrhage and of nervous, organic or psychological symptoms which have withstood all means of treatment, I do not see any formal contraindication. Operation may also be indicated when the life of the patient is endangered by a malady which no other treatment can cure. In spite, however, of the advantage presented by operation by the vagina, if we were certain of finding the organs in normal condition, the absence of certitude is a sufficient reason for preferring operation by the abdomen.

IX. *Extirpation of fibrous tumours and of the uterus by gastrotomy.*—Gastrotomy has also been applied to the ablation of large uterine sub-peritoneal myomata, either in consequence of an error of diagnosis which led to the discovery of a fibrous tumour in place of the ovarian cyst which was expected, or else from the express desire to apply the radical cure of the latter malady in the treatment of the former. The first attempt at extirpation of the uterus and of peritoneal fibromata was made by Heath (of Manchester) in 1843, in consequence of an error of diagnosis; he thought he had a case of ovarian cyst; the patient died. The first successful operations were performed by two American surgeons, Burnham in 1853, and Kimball in 1855. Some years ago, Clay (of Manchester), believing that he had to do with a multilocular cyst and discovering instead uterine fibrous tumours, removed the uterus, or at least the fundus of the organ with the tumours, ovaries and Fallopian tube, after having applied a strong ligature to the cervix immediately above the vaginal insertion which he retained in the inferior angle of the wound till it fell: the patient was cured. The fibroids with the portion of uterus and the ovaries weighed eight pounds; the anatomical preparation is in Edinburgh.¹ About the same time Kœberlé successfully extirpated a uterine fibroid and the two ovaries, also amputating the whole of the supra-vaginal portion of the womb.² This operation which at first was called *hysterotomy* has since received the more correct name of *hysterectomy*, since it is a question of extirpating and not only of dividing the uterus. In my opinion we do not yet possess a sufficient number of cases to authorise our forming a judgment as to the justifiability of the operation,³ but I must admit that the number of successful cases seems to increase in proportion to the number of operations performed and with improved methods. Amongst the encouraging cases I may mention that of Storer (of Boston) quoted by Kœberlé which was followed by cure; one of Spencer Wells's,⁴ in which the fibroma was separated from the fundus of the uterus by linear ecrasement, hæmorrhage was arrested by ligature and the point of section of the womb was retained in the lower angle of the wound; the patient recovered; that of Tranholme in which there was ablation of the uterus and both ovaries for a fibro-cystic tumour in a negress of about 40, who recovered and soon

¹ *London Med. Gaz.*, 18 April, 1863.

² Communication to the Acad. des Sciences, 15 June, 1863.

³ Pozzi, *Valeur de l'hystérotomie dans le traitement des tumeurs fibreuses de l'utérus*. Paris, 1875.

⁴ *Med. Times*, 1871.

afterwards resumed marital intercourse (*Hayem Revue*, t. v, pp. 179, 761); Tillaux's case (*Annales de Gynécologie*, 1879, t. xii, p. 148) of uterine fibroma in the left lateral wall with dangerous hæmorrhage, unbearable pain, intestinal occlusion from compression, extirpation and success; Kimball's successful case (*Annales de Gynécologie*, t. ix, p. 61), which however did not prevent the operator from condemning hysterectomy at the Congress of Chicago in 1877; a number of other cases might be mentioned.

There can however be no doubt that hysterectomy is more dangerous than ovariectomy. Kœberlé (*Dict. de méd. et chir. prat.*, art. OVAIRE, t. xxv, p. 594), out of 20 cases of hysterectomy performed by himself, counts 10 deaths and 10 cures. Terrier has performed hysterectomy twice and has lost both patients. Péan has performed the operation 43 times, has had 33 successful cases, and 10 deaths (oral communication). These are, I think, the most favorable statistics known, and they are not very encouraging. These cases do not include operations performed for cancer: they may be analysed thus: hysterectomy has been performed by Péan 35 times for fibromata (22 cures, 13 deaths), of this number one was complicated with an ovarian cyst, another with a cyst of the broad ligament; once for hypertrophy complicated with pelvic cyst (cure); eight times for fibro-cystic tumours (5 cures, 3 deaths); four times for uterine cystic tumours (4 cures); once for hypertrophy from sarcomatous degeneration of the mucous membrane and retention (cure).¹ Whilst admitting that hysterectomy may be resorted to when nothing can be expected from any other treatment, we should be all the more disposed to delay decision if the tumour does not progress rapidly, as experience has proved the occasional efficacy of the continuous current, ergotine, hot injections, resolvent alteratives and other means in arresting the development and even in producing diminution of these tumours. We shall therefore limit the indications to the following cases: danger from hæmorrhage, threatening of rapid and enormous development of the tumour, compression of the ureters, which has caused death (Matthews Duncan, *Brit. Med. Journ.*, 29th April, 1877), fibroma of the posterior wall wedged tightly into the pelvis causing constipation and threatening death.

X. *Puerperal hysterectomy of Porro.*—*Laparo-elytrotomy of Thomas.*—Ovariectomy has so familiarised surgeons with opening the peritoneum, and hysterotomy for fibroids has so frequently led gynecologists to consider the best manner of reaching the uterus either to open it or to excise a more or less considerable portion of it, that they have led to the practice of Cæsarian section, *i.e.* hysterotomy in the puerperal state, and to the invention of new methods with the object of facilitating extraction of the fœtus and of saving the life of the mother. I shall merely say a few words about these operations which belong exclusively to obstetrics.

¹ Péan and Urdy, *De l'ablation partielle ou totale de l'utérus par la gastrotomie*. Paris, 1873.—*Diagnostic et traitement des tumeurs de l'abdomen et du bassin*. Paris, 1880.

The idea was conceived of performing *amputation of the uterus after Cæsarian section*; it had been applied to animals and the operation was afterwards performed on a woman by Storer in 1860; unfortunately the patient died. In 1876 Porro, ignorant of the case, being obliged to perform Cæsarian section and having delivered a healthy child, amputated the uterus and its appendages immediately afterwards, employing rigorous antiseptic treatment. In spite of numerous cases of puerperal fever then reigning at the Maternity Hospital of Pavia the patient recovered and left the hospital with her child the fortieth day after operation. We must admit that the judgment which attributed the subsequent dangers of Cæsarian section to the presence of the wounded uterus and which regarded extirpation of this organ as the radical remedy of the evil was correct, and that the conditions of success were to be found in the performance of the operation assisted by antiseptic treatment. Since then, out of 33 patients who have undergone Porro's operation in maternity hospitals, 15 have died, 18 have been cured, and the majority of the children have been saved, a far more favorable result than had ever been attained by the ancient method of Cæsarian section (Pinard, *De l'opération césarienne suivie de l'amputation utéro-ovarique ou opération de Porro. Annales de Gynéc.,* 1879. Masson, *De la gastro-élytrotomie. Thèses de Paris,* 1877).

The *laparo-elytrotomy* of Gaillard Thomas is a lateral incision from the spine of the pubis to the antero-posterior iliac spine parallel to and above the crural arch, through which the vagina is opened at its junction with the uterus, so as to allow of extracting the child from it in place of extracting it from the fundus of the uterus through the linea alba which constitutes Cæsarian section. Gaillard Thomas communicated this method to the Academy of Medicine of New York on the 21st March, 1878; out of five operations he had saved four children and three mothers (*Annales de Gynéc.,* t. x, p. 232). Lateral incision is necessary here, *laparotomy* meaning lumbar incision, which was resorted to in the first ovariectomy; afterwards, however, MacDowell adopted the central line.

2. Tumours of the Annexes and Pelvic Cavity.

According to Léopold (*Archiv f. Gyn.,* Bd. vi, 2) *solid tumours of the ovaries* are rare, in the proportion of 1.5 per cent. of liquid tumours or cysts. They retain the normal shape of the organ by which they are distinguished from cysts. They have a variable consistency, from that of false fluctuation to that of stony hardness. Their exterior wall has also a variable thickness. The pedicle is usually short, and although the tumour may be closely attached to the uterus the latter remains normal. Among these tumours we may distinguish: 1. *Fibromata*, simple or complex (fibro-myomata, fibro-sarcomata), or with sanguineous lacunary spaces interposed (Waldeyer), or presenting an analogy with certain osteoid tumours, *i. e.* points of ossification;¹ there are also areolar fibromata (Spiegelberg), presenting a frame-

¹ Kärberlé does not believe in fibro-myoma of the ovaries (*Dict. de méd. et de chir. pratiq.,* art. OVAIRES, t. xxv, p. 508). I have undoubtedly seen them.

work of fusiform cells with a cavernous vascular development like that of sarcoma. 2. *Enchondromata* (exceptional), which must not be confounded with fibromata of cartilaginous consistency. 3. *Sarcomata* (rare), the blood-vessels of which are numerous and small in little tumours, but in large tumours, on the contrary, are very much dilated, have a thin wall without any muscular tunic or tunica adventitia, and furnished with simple endothelium. 4. *Carcinoma*, which I shall afterwards describe. 5. *Cystomatous lymphangiomata* have also been seen in the ovary (cysts remarkable for the dilatation of the lymphatics and the proliferation of the stroma).

Ziembicki (*Essai clinique sur les tumeurs solides des ovaires*. Thèses de Paris, 1875) has collected 38 cases (11 of sarcoma, 10 of fibroma, 6 of carcinoma, 3 of colloid tumours, 5 of cystic adenoma, 3 undetermined), the result of which is that solid ovarian tumours are more apt to be met with in young women. The peripheric vessels were very large in five cases only. We know, however, that very small tumours, a hematic cyst of the right ovary for example of the size of a chestnut, may cause intra-peritoneal hæmorrhage ending in death in thirty-six hours (Curt Wallis and Linden, *Hygieia*, 1876; Hayem, *Revue*, t. ix, p. 623). As a rule ovaries attacked by these tumours have few or no adhesions. Ascites is common without peritonitis or vascular compression; it is a serious sign when the tumour occupies the iliac fossa, which it usually does. The writer has divided them into three groups: one including tumours of rapid formation developed in from three months to two years (carcinoma, sarcoma); another, tumours of slow formation of from two to ten years (fibromata, dermoid cysts, cysts with thick contents); and another rare form in which ascites is absent, and the economy does not seem to be disturbed, although this is of the worst kind. We must beware of making an exploratory puncture in such cases, it being better to perform ovariectomy early. In these cases, however, success is not common: out of eight operations mentioned by Léopold only three were successful. Menstruation may continue in spite of the most serious degeneration of both ovaries; conception and pregnancy may even occur (Treille, *Tumeurs de l'ovaire dans leurs rapports avec l'obstétrique, c'est-à-dire avec la conception, la grossesse, l'accouchement, la puerpéralité*. Thèses de Paris, 1873). Vernich thinks that an ovarian tumour may become malignant through pregnancy and the puerperal state. He mentions the case of a young woman attacked by a tumour which for a long time was painless, but which increased during pregnancy, and at the autopsy proved to be a medullary carcinoma (*Du pronostic des tumeurs ovariques compliquant la grossesse*. *Beitrag zur Geburtsk. und Gynecol.*, Bd. ii, 2). Hempel (*Archiv f. Gynecol.*, Bd. vii, 3, 1875) mentions a case of carcinomatous degeneration of both ovaries during pregnancy. Several analogous cases have been published by Braxton Hicks, Kürsteiner, Spencer Wells, Hecker, Buhl, Hempel, Wallis, Linden, &c.

I. *Malignant tumours of the ovaries*.—These are nothing but cancer under various forms. Whether classed as scirrhus, encephaloid,

cephaloma, hematoma, fungus hematoides, fibro-medullary carcinoma, cysto-carcinoma, melanic cancer, &c., they have all the aggressive, destructive and cachectic tendency which characterises cancer. However, the various forms which these names recall may be met with in the different cases of cancer of the ovaries; this organic alteration may be combined with the existence of colloid or gelatinous matter, with the so-called areolar degeneration, as well as with the production of fibroids, or the development of cysts whether follicular or interstitial,



FIG. 425.—Colloid cancer of the ovary (Cruveilhier). The uterus and Fallopian tube remaining attached to the tumour by the ligament of the diseased ovary, we may form an idea of the enormous development of this tumour.

i.e. vesicular dropsies or cystoids. These morbid associations and the varieties which they engender depend on the real identity which cancer may present under these various appearances, and on the natural tendencies which the development of the degenerated tissue brings into play in an organ so disposed to hypertrophy in the form of fibromata or cysts. Cancer of the ovary seems to present itself more frequently under the form of encephaloid than of any other tissue.¹ It may attain considerable dimensions. I have lately seen one occupying the right ovary, weighing more than 11 lbs., forming a globular nodulated mass with very distinct spheroidal projections, of considerable size and occupying the whole of the right iliac and hypogastric regions, associated with integrity of the tube, congestive hypertrophy of the uterus and the recurrence of hæmorrhage simulating menstruation in a woman who had passed the menopause. The encephaloid masses, diffuent at several points, appeared to have originated in Graafian vesicles they were so well encysted; they seemed even, in several of these cysts, to have vegetated on the internal membrane of the vesicle, preserving an areolar or alveolar aspect, whilst the centre

¹ Lebert, *op. cit.*, p. 323.

was filled with fluid and especially with blood ; several of these cysts were distended by black blood, partly coagulated, apparently poured out by internal hæmorrhages, analogous to those which endanger the life of patients in cases of external encephaloid ; lastly, in several cysts was to be seen yellow matter similar not only to that which is sometimes met with in cancer, but also to that of a *corpus luteum*, situated in a superficial portion of the sac, and suggesting the idea that the encephaloid had been developed in ruptured Graafian vesicles and in the midst of true degenerated corpora lutea, an alteration mentioned by Rokitansky ; in others, black pigment was seen accumulated against the wall of the cyst between its internal membrane and the encephaloid tissue occupying the cavity of the chamber.

The signs of ovarian cancer are those of all ovarian tumours, especially of cysts ; but there are other differential signs. They are : the more advanced age at which it is usually manifested (after 40 and even 50),¹ the rapidity of its development and course (patients usually succumb within the year), the nodulated form, the smaller size, the hardness and sensitiveness of the tumour, the pains (?) experienced by the patient, the symptoms of internal or intra-cystic hæmorrhage which may occur, the premature disturbance of the functions and of the general health, œdema of the lower limbs, ascites (which may conceal the evil, but the evacuation of which by puncture allows of a most certain diagnosis and procures temporary alleviation to the patient), lastly, the engorgement of the mesenteric ganglia, the earthy look of the skin, the straw or leaden-coloured complexion, hectic fever and the signs of cachexia.

Treatment is merely palliative. Attention to hygiene, plenty of good air and milk, associated with tonics, preparations of iron, arsenic, hemlock ; narcotics, sedatives by the rectum or skin ; abdominal paracentesis to evacuate the fluid accumulated in the peritoneum, repeated as frequently as may be necessary ; these are the means to be employed.

II. *Avulsion and transmutation of the degenerated ovary.*—Whatever difficulty there may be in diagnosing this malady in practice, it is well to know that the ovary sometimes contracts such adhesions with the pelvic walls or abdominal viscera that the dragging produced by the subsequent development of these viscera or of the uterus may lacerate its natural attachments rather than its abnormal adhesions. Rokitansky² published seven cases of this very rare pathological fact. In all of them the ovary was degenerated : three times into a cyst filled with fat ; twice into osteo-calcareous tissue ; once into a sac filled with blood ; once into a sac containing fatty and calcareous matter. In all the cases except one avulsion had occurred in the left ovary. In all the displaced ovary adhered either to Douglas's *cul-de-sac*, to the sigmoid flexure or to the pubis, rectum, epiploon, mesentery, or abdomi-

¹ Buequoy (*Soc. méd. des Hôpitaux*, Dec., 1866), quoted by Mauriac in his translation of West.

² *Mémoire sur l'arrachement des trompes et des ovaires*, &c. (*Allgemeine Wiener medizinische Zeitung*, 1840, Nos. 2—4).

nal wall, the adhesions being the last traces of circumscribed peritonitis. In cases of intestinal adhesions laceration appeared to be caused by the dragging resulting from the alternations of distension and vacuity, and from the peristaltic and antiperistaltic movements of the intestine. In two other cases, originating probably in childhood, the cause of avulsion was undoubtedly the physiological development of the uterus, and in two others gestatory hypertrophy. In one case there was strangulation of the Fallopian tube and ovary from twisting round their axis.

Turner¹ found in the necropsy of a woman of 75 a tumour of the size of a foetal head firmly adherent to the peritoneum on a level with the sacro-vertebral angle, rising above the brim, fixed by adhesions and presenting all the characters of an ovarian cyst. It appeared that the uterus had been united to the floor and to the left wall of the pelvis by long-standing perimetritis. The left ovary, increasing in size in consequence of its cystic degeneration, had probably risen gradually out of the pelvis, dragging the Fallopian tube and broad ligament to the left side. These organs not having been able to yield more on account of the uterine adhesions and of the contraction of these adhesions, had become atrophied, and finally the left ovary had separated from the uterus.

III. *Tubal tumours*.—I have already spoken of several maladies which may produce general or partial increase of size and even a solution of continuity of the tubes: inflammation, catarrh, circumscribed obliterations, the accumulation of mucus, of epithelial elements, suppuration, abscesses, hæmorrhages, with free discharge or retention of blood and pus, with peripheric adhesions, dilatation or ruptures of the oviducts, fibroids, tubercle, &c. Cancer is rarely seen in the tubes. It is more apt to appear there as an extension of uterine cancer than of cancer of the ovaries; for the Fallopian tube may be seen in a healthy state lying on the diseased ovary, contrasting by its small size and integrity with the enormous tumefaction and serious degeneration of the generative organ. The only tumours which yet remain to be described are tubal dilatations, due either to excessive or disordered mucous secretion, usually coinciding with contraction or atresia of their canal, either from a cyst developed within their walls, in their neighbourhood, or even in the corresponding ovary, and possibly communicating with the enlarged cavity.

1. When there is *tubal dropsy*, *i. e.* dilatation of these organs by the accumulation of a sero-sanguinolent fluid or of a mass of cells or debris of epithelium which may have been taken for tuberculous matter, the malady may appear under various aspects. Sometimes only one tube is affected, sometimes both organs are attacked almost equally and symmetrically. Rarely the diseased oviduct is free and presents no alteration at its periphery: usually it bears traces of previous inflammation, and is connected with the neighbouring parts, with the posterior surface of the uterus or ovary by pseudo-mem-

¹ *Edinburgh Medical Journal*, 1861.

branous adhesions which deprive it of all mobility. The disorder may extend the whole length of the tube, but more frequently it is limited to one half of this canal: the portion which appears the most prone to disease, the one in which the mucus accumulates in greatest quantity and the distension of which is most frequent and most considerable is the external or ovarian half. When the whole tube, or half of it, is dilated by the uniform accumulation of fluid, the organ in spite of its dilatation preserves to some extent its normal form and presents the appearance of a portion of the intestine with somewhat incomplete circumvolutions, unequally distended by its contents; when on the contrary the dilatation is limited by neighbouring obliterations, or by the resistance of a cystic envelope in which the fluid

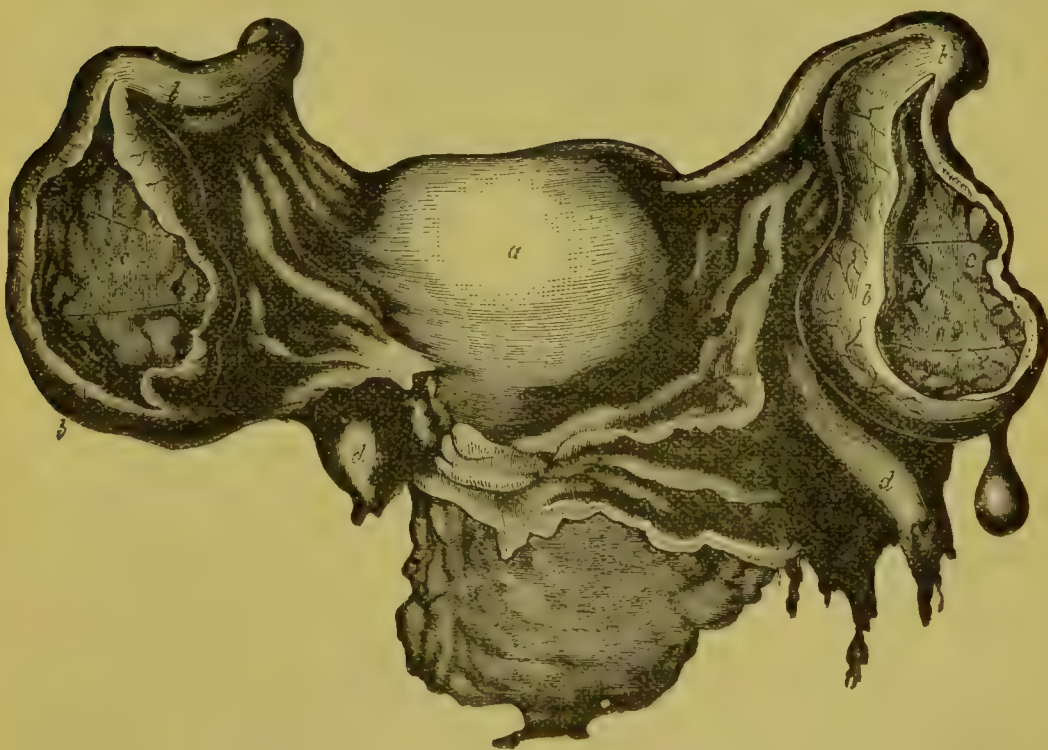


FIG. 426.—Fallopian tubes distended in their external or ovarian portion by a fluid collection, and a small cyst attached to one of the tubes (Hooper).

which occasions the distension is contained, the tumour is circumscribed and globular, and the rest of the organ, hardly exceeding its normal size, is neither perceptible to touch nor to sight. I have sometimes seen tumours like those I have just described and similar to those mentioned by De Haen,¹ Monro,² Boivin and Dugès,³ Kiwisch,⁴ Becquerel,⁵ Scanzoni,⁶ Rokitsky,⁷ Klob,⁸ &c.

¹ *Pract. Med.*, iii, 313.

² *An Essay on Dropsy*. London, 1765.

³ *Op. cit.*, ii, 590. *Atlas*, pl. xxxv, fig. 1.

⁴ *Klinik. Wortrög.*, ii, 202. Prague, 1849.

⁵ *Op. cit.*, t. ii, p. 278.

⁶ *Op. cit.*, p. 371.

⁷ *Lehrbuch der pathol. Anat.*, iii, 440. Vienna, 1864.

⁸ *Path. Anat. der weib. Sexualorgane*, p. 288. Vienna, 1864.

It is evident that there are no other elements for diagnosis than those which I have already described in speaking of salpingitis and tubal abscesses; and there is no doubt that the difficulties of diagnosis have frequently led to tubal cysts being taken for ovarian tumours.¹

2. The existence of *tubo-ovarian cysts* is established by five very interesting cases described by Adolphe Richard,² and by others already quoted by Morgagni, Franck, Chambon, Boivin and Dugès, Kiwisch, Follin, &c. It is proved by these cases that ovarian cysts may open into the uterus by the medium of the tube; that after having received the cystic fluid the Fallopian tube continues to undergo pathological change; that its calibre increases, its length doubles, its walls thicken, and the folds of its mucous membrane partly disappear; that the dilatation gradually reaches the internal portion of the oviduct, that a communication is established between the canal of the dilated tube and the cyst, and that from that time the complex cyst is formed, rightly designated as *tubo-ovarian* by Richard, which is probably somewhat allied to the malady described by Rokitansky under the name of *profluent dropsy of the tubes*. It is in cases of this kind that *catheterism of the tubes* may be performed. Although in normal conditions tubal catheterism is absolutely impossible, nevertheless in cases of menstrual retention or of dragging upon the tube by a fibroma above and in the axis of the uterus or of profluent tubal dropsy, the sound can really be passed from the uterus into the tube. This penetration, seen by Biedert and others, has been verified at an autopsy made by Bischoff (Hayem, *Revue des sciences méd.*, 1878, t. xi, p. 583). This malady or a tubal abscess is apt to be confounded with a purulent collection, circumscribed by peritoneal adhesions round the ovary and tube, and evacuated directly by the genital canal through the medium of the oviduct, a disease which was once seen by Kœberlé (*Nouv. Dict. de méd. et de chir. prat.*, art. OVAIRE, t. xxv, p. 500, fig. Paris, 1878).

It is not possible to give any rule of treatment for these cysts or for tubal dropsies. Nevertheless evacuation by the vagina may be tried if symptoms occur which seem to indicate it, and in the absence of any contra-indication.

IV. *Tumours of the broad ligaments*.—These are fibrous tumours, myomata, cysts of Rosenmüller's organ, hydatid cysts, &c., without counting the abscesses described when treating of perimetritis and tumours of the tubes, ovaries, or uterus insinuated by their progressive development between the folds of these ligaments.

1. *Fibrous tumours and myomata of the broad ligaments*.—These must not be confounded with sub-serous or intra-parietal myomata of the displaced uterus which have been expelled as an effect of their development and have become intra-ligamental. They may also be developed in the round ligament, as in the case of stone in the round ligament mentioned by Walter. Diagnosis is uncertain, treatment is the same as that for ovarian and peri-uterine fibroma.

¹ Puistienne, op. cit., p. 47.

² *Mémoires de la Société de chirurgie*, t. iii, p. 121. Paris, 1856.

2. *Cysts of the broad ligaments* occur more frequently in children than in adult women, in the folds of the broad ligament, between the Fallopian tube and ovary, and especially in the lower portion of the tube near the fimbriated extremity; they are small cysts varying in size from that of a millet seed to a small nut, sometimes sessile, more frequently attached by a pedicle of from one quarter to two inches long; the envelope and contents are transparent and are usually regarded as the remains of one or more blind tubes of Rosenmüller's organ (fragments of the Wolffian body).¹ Whether they are produced by an abnormal dilatation of one of the elements of the Wolffian body, or whether they result from a new formation, as Virchow² supposes, pediculated cysts are chiefly met with in children and cannot be diagnosed during life; interstitial cysts (between the folds of the broad ligament) may attain the size of an egg, an apple, or even of a foetal head. They have a tendency to remain stationary, and may disappear suddenly by rupture.³ Diagnosis is uncertain. If they do not disappear by resolution, and if they become large, they may be removed by operation similar to that for ovarian cysts. It is for these cysts that enucleation without either section or ligature of the pedicle may be tried. As for hydatid cysts of the ovaries and broad ligaments, the same remarks apply to them as to the same tumours in any other part of the abdominal or pelvic cavities.

V. *Abdominal and pelvic tumours common to both sexes, but giving rise in the woman to errors of diagnosis.*—Those which seem to me to have a special claim to mention are: the so-called encysted dropsy of the peritoneum, hydatid cysts, and floating tumours of the abdomen.

1. *Sero-purulent cysts of the peritoneum.*—These are serous and sometimes purulent collections between the peritoneum and the abdominal muscles, or rather abdominal walls, in the sub-peritoneal cellular tissue, sometimes between the parietal or visceral peritoneum and a broad false membrane limiting an enclosed space in some region of the serous membrane, especially in the pelvic cavity. Therefore we may distinguish: parietal cysts and intra-abdominal cysts. The former are usually situated in front, but are occasionally found behind.⁴ The latter are formed either in the epiploon or by adhesion and the encysting of a fluid in an accidental intra-peritoneal cavity. Sometimes even a hydatid cyst may exist simultaneously in the abdominal wall.⁵ These collections, described as early as the 16th century, were attributed by Nuck⁶ to an effusion in the space between the peritoneal fold which was supposed to be double; but they could not have such an origin. Not only do they seem to be exclusively situated either in the sub-peritoneal

¹ Verneuil, *Recherches sur les kystes de l'organe de Wolff* (*Mémoires de la Soc. de chir.*, t. iv, p. 58. Paris, 1854).—Kœberlé, art. OVAIRE in *Dict.*, &c.

² Op. cit., t. i, p. 260.

³ West, op. cit., p. 521.

⁴ Boinet, *Bulletin de la Soc. Anat.*, t. xix, p. 285; t. xxvii, p. 20.—Puis-tienne, *Tumeurs enkystées pelviennes et abdominales*, p. 75. Paris, 1866.

⁵ Degner, *Act. nov. curios. naturæ*, t. v, Obs. 2.

⁶ *Observations rares de médecine*, t. ii, p. 176. Paris, 1758.

cellular tissue or in an adventitious¹ intra-peritoneal cavity, but they are apparently almost always the consequence of peritonitis. The researches of Bernutz² tend to include the so-called encysted dropsy of the peritoneum among cases of peritonitis encysted by adhesions, as they have also included the majority of peri-uterine phlegmons among cases of adhesive suppurative and encysted peritonitis. Bernutz has compared all the cases of encysted dropsy of the peritoneum analysed by Morgagni, as well as all those indicated more recently, as examples of this so-called encysted dropsy; he has collected in all 36 cases, and has not found in one any proof of the reality of this malady. The diagnosis is sometimes so difficult that they have been taken for ovarian cysts. The treatment, more difficult still, does not differ from that of pelvic peritonitis or of other sero-purulent intra-peritoneal collections.

2. *Hydatid cysts*.—Charcot³ has collected 12 cases of hydatids of the pelvis, 6 in women, 2 in which the hydatids were originally developed in the ovary. Several coincided with the development of hydatids in other parts of the body. Their usual starting-point is the sub-peritoneal cellular tissue, either between the rectum, vagina and uterus, under the peritoneum which forms the recto-vaginal *cul-de-sac*, or between the uterus and bladder, or in the broad ligaments, forming a tumour to the right and left in the vagina (Roux). In cases in which the ovary appeared to be transformed into a hydatid cyst it had fallen into the vagino-rectal *cul-de-sac* and had contracted adhesions with the neighbouring parts. Hydatids of the pelvis form, in woman, a smooth, rounded, fluctuating, indolent tumour, projecting towards the rectum and vagina, or even above the pubis, when it is developed in front of the uterus. The symptoms are those of compression and sometimes of inflammation. The presence of hydatid tumours in other parts of the body is a valuable element of diagnosis. The hydatid thrill is seldom perceived. The escape of the hydatids is the only certain sign. These tumours are often confounded with commencing or even with large cysts of the ovary, especially when they are developed in front of the uterus, or in the epiploon, in the left hypochondriac region, in the liver, and even in the kidney. The treatment is the same as for hydatid cysts of the abdomen in man: the potential cautery, opening of the sac, destruction and expulsion of the hydatids, injection and compression of the cyst.

3. *Floating tumours of the abdomen* are ovoid, of the size of a turkey's egg, solid in consistency, usually situated in the right hypochondriac region or in the loins, rarely on the left, sometimes on both sides symmetrically, descending even to the iliac region; they are seldom seen in man but frequently in women. According to Cruveilhier,⁴ Fritz,⁵ West,⁶ and other observers they are only *floating*

¹ Guyon, *Dict. encyclopédique des sc. médic.*, art. ABDOMEN, i, 183.

² Unpublished paper, quoted by Puistienné, *op. cit.*, p. 76.

³ *Mém. sur les tumeurs hydatiques du petit bassin* (*Gazette médicale de Paris*, 1852).

⁴ *Anatom. patholog. générale*, t. ii, p. 723.

⁵ *Archiv. gén. de méd.*, 1859, t. ii, pp. 158, 301.

⁶ *Op. cit.*, p. 559.

kidneys, expelled from their natural position by a sudden shock or by the exaggerated and continuous compression of corsets (Cruveilhier). They are more easily distinguished from tumours of the ovaries, broad ligaments and tubes than the majority of the other abdominal or pelvic tumours which I have just described.

VI. *Extra-uterine pregnancy*.—Wherever the seat of the extra-uterine pregnancy may be, whether it is ovarian, tubal, tubo-interstitial or abdominal, it has among other consequences that of producing a tumour which owing to its position and the variable symptoms by which it is accompanied, often passes either for a malady of the uterus or of the annexes. I shall only consider it from this point of view; for its complete history special works should be consulted.¹

Diagnosis.—Three periods should be distinguished: 1, that which corresponds with the beginning of pregnancy and extends to the fourth or fifth month, till the fœtal movements are perceptible; 2, that which extends from this time to the natural term of gestation; 3, that which follows the normal period when delivery should take place, and which is characterised by the death of the fœtus, its mummification, its various alterations, the suppuration of the sac, &c.

1. Interrupted menstruation, which is so important in the diagnosis of simple pregnancy, is much less so here: whilst there are cases in which the menses continue abundantly and normally during the first period, there are others in which they cease to flow from the first appearance of pregnancy, only reappearing after the death of the child. In the majority of cases vomiting occurs; it appears even more obstinate and violent than in normal pregnancy. The mammary glands are also usually enlarged, the areola becomes brown, the tubercles described by Montgomery are developed, but it may be that this change of size is not very marked, and that the colour of the areola loses its importance from the fact of a previous pregnancy. A more marked phenomenon, described in all cases that have been carefully observed, is a more or less acute abdominal pain analogous to that which is designated under the name of uterine colic. Commencing in most cases shortly after conception it lasts to the end of pregnancy, with alternations of increase and diminution; the seat of this pain is in the hypogastrium and the flanks. To give an idea of the difficulties of such a diagnosis I reproduce the accompanying figure which shows the general appearance of a tubal pregnancy and the interesting peculiarities which characterised this *ad-uterine* pregnancy (*i. e.* in one cornu of the uterus), which in this exceptional case was taken for a tubal pregnancy.

2. Towards the fourth month, and especially in the beginning of the fifth, we are authorised to be more explicit, without, however, being secure from all error. There was a well-known case not long ago of a woman who was examined by most of the physicians and

¹ Velpeau, *Dict. de méd. en 30 vol.*, t. xiv.—Dezeimeris, *Journ. des connaissances médico-chirurgicales*, 1836.—Triadou, *Des grossesses extra-utérines*. Thèse d'agrégation. Montpellier, 1866.

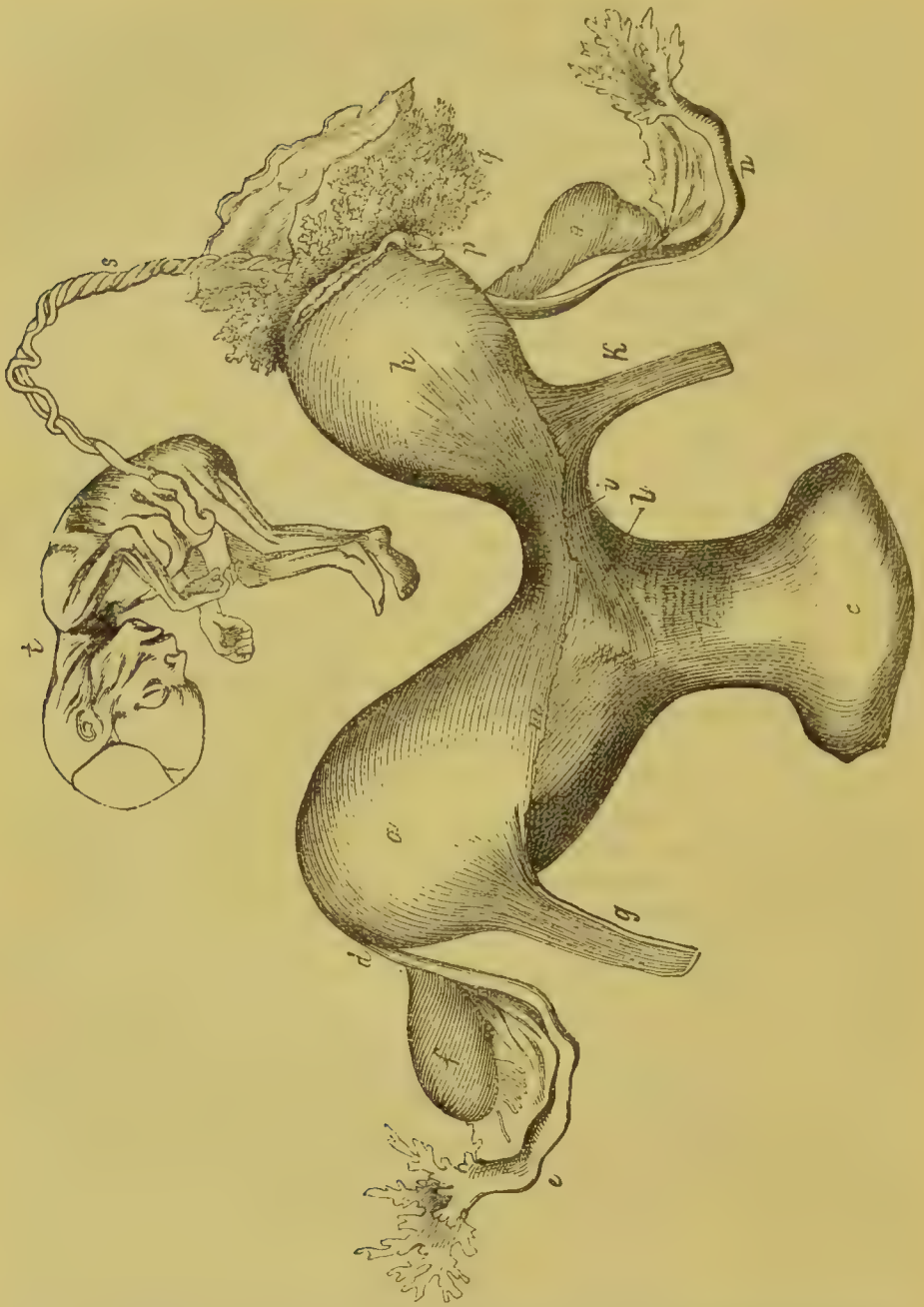


FIG. 427.—Pregnancy in a closed cornu of a uterus bicornis, taken for a tubal pregnancy (Kussmaul, op. cit., p. 155, fig. 45; from a preparation by Heyfelder): *a*, body of the right unicorn uterus, the cavity of which was lined with a decidua; *b*, its cervix; *c*, vagina; *d*, top of the right cornu; *f*, right ovary; *e*, right oviduct; *g*, right round ligament; *h*, left rudimentary cornu in gestation; *i*, tissue uniting the left to the right cornu, in the midst of which were found the remains of a canal destined probably for a means of communication between the cavities of the two horns; *k*, left round ligament; *l*, muscular fibres proceeding from it to be inserted into the body of the right horn; *m*, peritoneum; *n*, left oviduct; *o*, left ovary, with a very large *corpus luteum*; *p*, laceration of the gestatory portion; *q*, placenta; *r*, membranes of the ovum; *s*, umbilical cord; *t*, embryo.

surgeons of the Paris hospitals, and considered as having an extra-uterine pregnancy, and who was delivered naturally at the end of the ninth month to the great astonishment of Huguier, who published the instructive case: it is right to mention that Dubois was not mistaken in it. In an analogous circumstance Pajot diagnosed a normal pregnancy in an exceptionally attenuated uterus, a diagnosis which proved to be correct. I have seen a similar case taken for extra-uterine pregnancy by a justly esteemed practitioner; I not only corrected the diagnosis but prognosed premature delivery, which soon occurred. In another case Schlesinger¹ diagnosed an ovarian pregnancy in a woman who was delivered normally at term: the cause of this error was a tumour in the right inguinal region.

Though in such cases it is easy to make a mistake, there are numerous indications authorising the physician to pronounce a decided opinion. We observe on the one hand that there is pregnancy, from the foetal movements and from the information furnished by auscultation; on the other hand, that it has an unusual position, as examination by the vagina and abdomen discovers a tumour situated on one side, painful on pressure and distinct from the uterus, the upper limits of which can often be felt.

The difficulty of effecting intra-uterine *ballotement*, the small size of the womb, the displacements of this organ above, below, or to one side, according to the position of the extra-uterine cyst, are all indications of extra-uterine pregnancy. Lastly, when the natural term of pregnancy arrives, the patient is attacked by labour pains; these pains are prolonged for three or four days, cease and return at intervals without effecting anything. This symptom alone would serve as a certain basis for diagnosis if any was required at this period.

3. When the foetus is dead, we must judge from the history of the case, *i.e.* from the previous symptoms which may pass as signs of gestation and of extra-uterine pregnancy. Besides these, direct examination, palpation, touch, the perception of irregularities characteristic of the various segments of the foetus through the sac which encloses them, &c., will help in distinguishing the foetal cyst from ovarian, tubal or abdominal tumours, whether solid or fluid, serous or purulent, traumatic, inflammatory, or diathetic, with which they might be confounded.

Treatment.—It is rare for extra-uterine pregnancy to reach its natural term: the statistics of Campbell, Hecker and Mattei, as well as those which Puech has communicated to me, prove that it is quite an exceptional circumstance. In three quarters of the cases the cyst is ruptured before this period. This termination, which is rather less frequent in abdominal pregnancy, may be said to be the rule in interstitial, tubal and ovarian pregnancies.

Extra-uterine pregnancies are susceptible of different terminations. Sometimes the cyst is ruptured, and then this rupture either produces a hæmorrhage which is fatal in a few hours, or acute peritonitis fatal

¹ *Casper's Wochenschrift*, 1845, No. 31.

in from two to ten days, or circumscribed peritonitis which may be successfully treated. In the latter case, matters may go on just as when the cyst does not rupture. Sometimes the cyst does not rupture and resists the pressure exercised on it from within by its contents. The embryo then dies prematurely, or it reaches the ultimate limits of its development and dies from insufficient nutrition. In both cases it may happen that the cyst is tolerated, or that nature makes efforts to expel it. When tolerance is established the cystic walls are modified, vascularisation diminishes and the amniotic fluid is absorbed; the product of conception shrinks and shrivels up, and undergoes the waxy transformation of which there are numerous examples, Puech having collected 35 cases. When tolerance cannot be established, which is especially observed when the foetus is large, the latter irritates the neighbouring parts by its presence, provoking expulsive efforts. The cystic walls become inflamed, contract adhesions with the neighbouring parts and cause death more or less rapidly, according to the degree of inflammation, and also according to the strength of the patient. Peritonitis is therefore the most frequent cause of death; next to it come exhaustion, hectic fever and purulent infection. More frequently nature creates an exit for the contents of the cyst, either externally or into a cavity. After more or less serious symptoms have lasted for some time, an abscess is formed and opens at some part of the abdominal walls, into the interior of the rectum, or more rarely into some other point of the intestinal tube, into the vagina, into the bladder, or it may be that it escapes by several of these channels simultaneously: vagina and umbilicus, rectum and bladder, rectum and vagina. Nothing is more variable than the period when this work of elimination commences; it has occurred immediately after the death of the foetus, and at other times ten or twenty-five years later. Of all points of exit the rectum is undoubtedly the most dangerous, but it is not so serious as has been said, for out of 69 cases there were 45 cures. It is, however, serious enough, causing as many deaths as all the others put together.

Extra-uterine pregnancy is one of the most dangerous conditions that can be met with; although the maximum of danger is at the beginning, since a woman in apparent health may succumb in a few hours, it must not be forgotten that danger continues to the end; hence the necessity of *medical intervention* and the obligation of laying down rules for the conduct of such cases. The indications vary according to the three principal periods of the disease already mentioned.

1. In consequence of the danger which threatens the mother, and the inevitable death of the child, we are justified in considering whether it would not be better to arrest this pregnancy from the beginning by preventing the development of the embryo. There are, however, serious practical difficulties in the way of various kinds, especially those relating to the difficulty of diagnosis; for it is really impossible to diagnose an extra-uterine pregnancy with certainty before the second month. Now statistics prove that it is at this

period that the most serious consequences of interstitial or tubal pregnancies might be most certainly prevented, and that there is some chance of triumphing over the dangers inherent to this state.

However that may be, if we succeed in making a diagnosis we should not hesitate to inject atropine or morphia into the tumour, using a syringe with a long cannula, as Friedreich¹ did, to arrest the development of the embryo and the increase of the tumour simultaneously. We could also arrive at the same result by electro-acupuncture as employed by Burci and Bartoloni² in a case of tubal pregnancy at the third month; I should however prefer the former method.

2. The difficulties of diagnosis diminish in the fourth and fifth month; therefore I hesitate less to recommend injections being made into the cyst at that time, being convinced that they would be useful and that we could act with more chance of certainty.

It is true that at that time the fœtus would only be sacrificed at an advanced stage of gestation, and that the ulterior accidents of elimination would not be so surely prevented. This serious decision however should never be made without a consultation; even at this period it is not always easy to diagnose extra-uterine pregnancy. If the child has reached the ninth month and is still living and if the mother desires an operation, gastrotomy might be attempted, although there is little hope of success. In this case as in those in which the child is dead, an incision should be made as nearly as possible at the point where the fœtal head is supposed to be, the only reason for another point being chosen would be the fact of its being lower down and of the skin being thinner.

3. When pregnancy is more advanced, when the child is dead and the mother suffers only moderately, we may wait, but if a process of elimination is developed, intervention is indicated, either by opening the tumour with Vienna paste, or, if it is already opened, by enlarging the orifice with the bistoury, so as to be able to extract the bones and fœtal fragments more rapidly.

As for the point of incision in such cases it ought to be where this work of elimination is being carried on; if this points in several directions, the abdominal wall should be preferred.

STERILITY

*Sterility*³ may be the result of three distinct conditions, the cause of which is more especially dependent on the woman, the seat of which is deeper, and the cure more difficult in proportion as we pass from the first to the second and from the second to the third.

¹ *Gaz. hebdom.*, 1864, p. 716

² *Union médicale*, 4 April, 1857.

³ As for the importance of sterility in gynæcology, it is sufficient to mention that Simpson, making investigations as to the frequency of sterility, found that out of 1252 marriages, 146, that is, about 1 in 8·5, were sterile. Spencer Wells found also that 1 out of every 8 married women is sterile. Sims arrived at the same result, and I am surprised at the increasing number of women who consult me on this matter.

These three conditions are :

1. Inaptitude for coitus or impotence.
2. Inaptitude for conception or infertility.
3. Inaptitude for germination or sterility strictly speaking.

These various inaptitudes may be temporary or permanent, relative or absolute, curable or incurable. They are so in different degrees : inaptitude for germination, for example, is the one which is most frequently incurable and the most complete.

1. *Inaptitude for coitus or impotence*.—It is more limited in the woman than in the man. The woman in a manner playing a passive part in coitus it suffices for the vulva and vagina to be sufficiently open to receive the penis and permit of copulation. There are, however, malformations of the external genital organs, congenital or accidental, teratological or pathological, which may render a woman temporarily or permanently impotent.

Vulva.—Apart from adhesions of the labia, which are always of accidental origin and which hinder intercourse, I do not know of any vulval lesions, strictly speaking, capable of causing sterility except the conformation designated by the name of *transversc female hermaphrodisia*, for in such cases, although menstruation is regular pregnancy is exceptional.

If consulted for a case of this kind, we should imitate Coste¹ in making a vagina and amputating the clitoris : and perhaps the desired result would be obtained. It is needless to say that this attempt should not be made unless one is assured of the existence of menstruation and of the development of the uterus. The same precautions should be taken in a case of absence of the vulva ; for, with the exception of Magee's² and Rossi's³ cases, this is usually accompanied by the absence or atrophy of the uterus. I have seen women in whom excessive length of the nymphæ, inclining towards the vagina at the moment of intromission, constituted, if not an insurmountable obstacle, at least a serious difficulty in the way of coitus : in one case I removed them, and attributed to this circumstance the cessation of absolute sterility which had lasted for five years ; in another case, this excessive length coincided with a congenitally narrow os. The influence of the nymphæ on sterility ought to be much more marked when they are affected with elephantiasis or even with simple hypertrophy, the consequence of syphilis for example.

Vagina.—The anomalies of deficiency, bifidity, and the abnormal opening of this canal may be causes of impotence. Anomalies of deficiency may be either congenital or accidental, partial or total. *The total or partial absence of the vagina* from defective formation or arrest of development, imperforate hymen, membranous occlusion of the lower part of the vagina, and extreme narrowness of this canal⁴

¹ *Journ. des connaissances med.-chir.*, t. iii, p. 276, 1835.

² *The Lancet*, 23 July, 1842, p. 575.

³ *Annales de Montpellier*, t. xiii, p. 39.

⁴ Delaunay, *Étude sur le cloisonnement transversal du vagin*. Thèses de Paris, 1877.

should be mentioned in the first rank. I shall confine myself to mentioning that, in such cases, the treatment instituted for the re-establishment of menstruation is the appropriate one for the cure of sterility. Only it is to be remarked that, when retention of blood is prolonged for several years, subsequent disorders of the uterus, ovaries and tubes may result, rendering conception impossible. The sterility observed by Bécasseau, Kluyskens, Chevalier and Patry¹ in the patients on whom they operated may be explained in this way.

Congenital narrowness of the vagina throughout its whole extent is rare. Nevertheless, Antoine,² de la Toison,³ Plenck,⁴ Benevoli,⁵ Denman⁶ and Scanzoni⁷ have given very curious examples of it. In these cases it was not so much menstrual disorders as difficulties in the way of coitus that attracted the attention of these physicians. The remedy for this condition is dilatation. When *occlusion of the vagina is not complete* conception may occur exceptionally, even when intromission is impossible. I knew a woman in whom the vesico-vaginal septum was destroyed and the vagina obliterated at the vulva, except at one point, where there was an opening large enough to admit a female catheter, by which the urine escaped; since her confinement, the cause of this lesion, more than a year before, menstruation had not occurred; in spite, however, of these unfavorable conditions, conception took place, pregnancy arrived at term, and the patient died from the consequences of labour.

Bifidity of the vagina, i. e. its longitudinal division, is only a cause of sterility when the calibre of the two vaginal canals is so contracted as only to allow of imperfect intromission, or when the half of the organ in which coitus is practicable ends in an atrophied half of a uterus. Laaser's⁸ case may be mentioned as an example of the latter category. In such circumstances the physician may dilate one of the two vaginæ artificially, or, if dilatation be insufficient, the division may be removed as was done by Laaser. In a case of the same kind (double uterus, double vagina and congenital vagino-rectal fistula) I succeeded in destroying the longitudinal division of the two vaginæ by the application of a long enterotome and the obliteration of the fistula by suture.

There may be *abnormal orifices from the vagina* into the bladder, urethra or rectum. The first anomaly, which is the rarest, has only been observed four times.⁹ It is only curable by surgical intervention, *i. e.* by the formation of a vagina, and the obliteration of the

¹ Puech, *Des atrésies des voies génitales de la femme*, p. 131. Paris, 1864.

² *Histoire de l'Académie des sciences*, 1712, p. 36.

³ *Ibid.*, 1738, p. 58.

⁴ *L'art d'accoucher*, translated by Pitt, p. 119.

⁵ *Delle hernie intest.* Florence, 1747.

⁶ *Dict. en 60 volumes*, art. VAGIN.

⁷ *Op. cit.*, p. 480.

⁸ *Monatschrift für Geburtskunde*, 1864, Bd. xxiv, S. 441.

⁹ Chevreuil, *Journ. de méd. et de chir.*, 1772, t. xli, p. 447.—Kingdon, *Gaz. méd. de Paris*, 1838, p. 283.—Coste, *Journ. des conn. méd.-chir.*, 1835, t. iii, p. 276.—Huguier, in Lefort, *op. cit.*, p. 203.—Puech, *Mém. sur le cloaque urogénital* (*Montpellier médical*, 1868).

abnormal opening: by enabling the menstrual blood to escape by the normal channel we may at the same time restore the power of conception to the woman. The opening of the vagina into the rectum¹ is observed, on the contrary, much more frequently: it would take too long to mention all the cases that I have collected, nor is this the place to establish between them distinctions and divisions interesting from other points of view; it is enough to add that the artificial formation of that portion of the vulvo-uterine canal which is wanting and obliteration of the abnormal opening are indicated. There are cases in which the vagina, though apparently normal, is nevertheless affected with some imperfection the influence of which on sterility is more real than would be supposed. Such are *extreme shortness of the vagina*,² which favours the formation of a copulative sac and projection of the semen outside the axis of the uterine canal; excessive length and breadth of this organ, which greatly increases the chances of the fertilising fluid being lost in the anfractuosités of this membranous canal without penetrating the uterus; lastly, inequality of the two vaginal walls, the posterior one which is usually the longer forming a *cul-de-sac* behind the cervix, in which the sperm is accumulated. When a congenital or acquired narrowness is added to extreme shortness of the vagina it may lead to most troublesome consequences. Barnes says (op. cit., p. 113) that after the menopause, especially in women who have not had uninterrupted conjugal relations, the uterus, vagina and vulva undergo a kind of atrophic involution, by which they lose their dilatability, and which may render coitus not only painful but dangerous. In the museum of St. George's Hospital (series xiv, 108) is to be seen a vagina the fundus of which was lacerated in coitus.

Vicious insertions of the vagina into the uterus are also causes of inaptitude for fecundation. An anterior or lateral copulative sac is formed, or oftener still a posterior one (the uterus apparently being inserted in the anterior wall of the vagina, sometimes very near the vulva). This sac, most frequently congenital, sometimes acquired, forms a receptacle for the sperm, which is always unfavorable to fecundation.

In place of being originally narrow, or subsequently contracted, the vagina and vulva may be in a state of *coarctation* produced by vaginismus or spasmodic contraction of the vagina and of the *sphincter cunni*. The effect of this nervous malady is, that the introduction of even a small foreign body into the vaginal canal sometimes determines such acute pain as to produce syncope, which makes coitus for the time impossible. This state may last for years if not remedied by forced dilatation or other means. In a case of the kind conception was effected during anæsthetic sleep.³

¹ Murat, *Dict. en 60 vol.*, art. VAGIN.—Isid. Geoffroy-Saint-Hilaire, *Anomalies de l'organisation*, t. i, p. 501.—Bouisson, *Des vices de conformation de l'anus et du rectum*, p. 39. Paris, 1851. Roubaud, op. cit., t. ii.

² I have several times seen the vagina shorter than usual, as in Pfau's case, where after marriage it was only $1\frac{1}{2}$ inch long.

³ Sims, op. cit., p. 343.

II. *Inaptitude for conception or infertility* may either depend on mechanical or physiological causes. The sperm is hindered from coming in contact with the ovum sometimes by direct obstacles to the penetration of the semen, or by disease of the parts which the spermatozoa have to traverse; sometimes by a merely functional impotence, a physiological alteration of the means of transport for the fertilising fluid or the localisation in these organs of a general morbid condition. Obstacles to conception are the most common causes of sterility: some are incurable; others, although numerous and dependent on various conditions, may be overcome and frequently yield to local or general treatment which may be applied according to the indications.

1. *Mechanical and organic obstacles to conception*.—They may exist in the uterus or in the tubes, or may result from the presence of pathological fluids in these organs, or of secretions unfavorable to the preservation of the germs. The sterility is sometimes incurable, at other times, on the contrary, it may be treated with more or less chance of cure, according to the nature and extent of these obstacles.

Absence of the uterus and the *embryonic* condition of this organ cause absolute sterility.¹

The uterus sometimes preserves its foetal or *infantile* characteristics even after puberty; it may be either simple, imperforate (Duplay), or bicorn (Wehr of Cassel). This condition is apparently incurable, whichever variety occurs. Meadows,² in a case of this kind, has tried galvanic sounds and pessaries, which however only produced acute irritation.

Under the name of *pubescent*³ uterus Puech has designated the uterus which preserves after puberty the characteristics peculiar to this organ during the period of transition between childhood and puberty. He has seen two cases, one of which was confirmed by autopsy. In the latter case, although the woman had been a prostitute for twelve years, she had never menstruated; in the other, a woman of forty, hæmorrhage from the vulva had only occurred three times at long intervals. The vaginal portion of the cervix is small and conical or presenting a warty projection of the size of a pea, the meatus is very small. The incomplete development of the uterus is discovered by vaginal and rectal touch; by the latter, the upper borders of the organ are easily reached or exceeded. A probe introduced through the cervix demonstrates with certainty the defective length. Notwithstanding what has been said by Scanzoni as to the incurability of this lesion, it should be treated by the means indicated for uterine atrophy,

¹ If absence of the uterus is the result of an operation, sterility is not absolute. I have mentioned the case of a lady on whom Kœberlé had operated (ablation of the uterus), but in whom he had unfortunately left the ovaries. A small fistula having persisted, which formed a communication between the vagina and abdominal cavity, this unfortunate woman had an extra-uterine abdominal pregnancy, a most remarkable occurrence, showing the limited part which the uterus plays in the accomplishment of reproduction.

² *Gaz. méd.*, 1865, p. 10.

³ Incomplete development of Kiwisch, Rokitansky and Scanzoni. See p. 80.

especially by electricity or by Simpson's galvanic pessary, the introduction of which may be accompanied when necessary by dilatation. Iron and other tonics should also be administered. The uterus may be to all appearance normally developed and yet *have no cavity*, either owing to arrested development of Müller's canals when they are still solid, from the eighth to the tenth week, or as the result of precocious adhesions of the opposite walls of the mucous membrane. This very rare state, of which Boivin and Dugès give an example, is like the preceding compatible with perfect health, and is manifested by the absence of menstruation, and of the signs of menstrual retention, notwithstanding the existence of symptoms of monthly ovulation; by the impossibility of conception, although intercourse may be easy; by the imperforation and impenetrability of the uterus in spite of the development and external appearance of this organ being almost normal.

Uterine *atrophy* is all the more deserving of attention because it may be followed by cure, and consequently by the cessation of sterility. It is caused in the same way as atrophy of the ovaries or is produced after labour from the excessive retrograde evolution which takes place in the uterus at this period (p. 621). I have already spoken of the cases mentioned by Simpson in describing this remarkable malady; I have seen several myself; Puech has observed the same disease in a woman after delivery and eleven months' lactation; and in another after repeated miscarriages. Although there is little hope of cure for this state when it is of long standing, the physician should not remain inactive; he should on the contrary strengthen the constitution by tonics, hydropathy and sea-bathing, and also apply electricity to the uterus, introduce galvanic stems, and so endeavour to produce new vitality in the organ. There will be all the more chance of success, if treatment is instituted soon after delivery. Uterine atrophy may affect the whole uterus, or only one of its segments. The same treatment is applicable to either segment, and to the whole uterus.

Simple or complicated *imperforation* of the cervix is a cause of sterility which may be treated successfully, especially if it coincides with normal conformation; for it is frequently accompanied by an abnormal position and form. It is the same with septa situated in the vagina more or less near the cervix, imperforate or pierced with a hole, or membranous contractions of this canal which, without being a cause of impotence, yet prevent conception; it is the same with congenital narrowness or accidental contractions of the os, which is so frequent a cause of *mechanical dysmenorrhœa*.¹ I have already spoken of these pathological states (p. 305); and shall only remark here that they play an important part in sterility, and that as they are not always accompanied by menstrual disorders, it is easy to misinterpret the real cause of sterility in these cases if a direct examination is not made. I have also described the treatment which is suitable for them during the paroxysms of pain attending menstruation, as well as in the intercalary periods, in palliative as well as in radical cure; and shall only further remark, that radical cure is only produced by dilatation or

Oldham was the first to use this name (*London Med. Gaz.*, vol. ii. p. 919).

double incision of the cervix (p. 313). Local treatment should always be followed by general tonic treatment and diathetics, according to the case, and by the use of ergot, electricity, purgatives, &c., with the object of resolving the congestive condition due to the long-standing atresia or contraction.

Congenital or consecutive *contractions* may affect the *os internum*. They should be treated in the same way as those of the vaginal orifice, by gradual dilatation, which is less dangerous and more lasting in its effects than simple incision. It is the same when they affect the two orifices of the cervix simultaneously, and provided there is neither contraction nor atrophy of the cervical cavity, we may hope for cure. Dilatation has the great advantage of being *resolvent* as well as dilative; so that in some cases gradual dilatation by sponge tents may not only procure a palliative but a radical cure in contractions of the uterus as in contractions of the urethra, especially if we associate with the mechanical action the chemical one of medicaments such as belladonna, the red oxide of mercury and others, in the form of resolvent ointment covering the tent; it is also useful to administer these drugs in enemata, and to pour glycerine on the cervix, keeping it there by a large plug of cotton wool; for it softens the cervix as well as contributing to the cessation of the contraction or relaxation of the orifice.

Torsion of the body on the cervix (pp. 309, 430) is another mechanical alteration producing effects of the same kind, and in consequence of which a deviation occurs which renders penetration of the sperm difficult or impossible. The long continued use of laminaria tents, which act simultaneously by enlarging and straightening the isthmus, greatly facilitates conception. It is unnecessary to say, that the association of general means with local applications is still more important here than in the preceding cases; for torsion of the isthmus is almost always dependent on flexion, softening of the uterine tissue, or consecutive chronic congestion, and consequently requires the use of resolvers, restoratives, tonics, sea-bathing and especially hydro-pathy.

*Flexions*¹ are causes of sterility when well marked, and the sterility is incurable when the flexion is kept up by adhesions and cicatricial bands which make it impossible to straighten the uterus. There are two causes of sterility in such cases: the first is the mechanical obstacle, which hinders facility of communication between the cervical and uterine cavities at the isthmus: the second, the alteration of tissue, the morbid state, the softening under the influence of which flexion is produced and maintained. It is unnecessary to add that when adhesions prevent reduction of the flexion, especially of retroflexion, these adhesions not only prevent conception by hindering the straightening of the organ, but further, are the indications of a previous inflammation of the uterus, Fallopian tubes and ovaries, or of peri-uterine inflammation. In such cases there are almost always altera-

¹ Lumpe, *Considérations sur la stérilité causée par l'inflexion de l'utérus* (*Monatschr.*, &c., 1864, Bd. xxiv, S. 69).

tions of the uterine mucous membrane, obliterations of the tubes, alteration of the normal relationship of the ovary with the oviduct, vicious adhesions of the uterus and annexes, which are additional causes of sterility. I do not therefore speak of the means of treatment to be employed in such circumstances. In the case of simple flexion we must endeavour, especially in a young woman, to straighten the organ (p. 420). In cases of complex flexion we may be obliged to perform partial section of the convex lip of the cervix, in order to form a direct course for the semen through the cervico-uterine canal (see Fig. 283, p 426).

Sometimes simple *version*, or defective relations between the male organ which ejaculates the semen and the uterine meatus which ought to receive it, is sufficient to render penetration of the sperm very difficult if not impossible and to prevent conception.¹

Sterility caused by retroversion may be remedied by means of Hodge's, Meigs's or Sims's ring pessaries, which take up very little room in the vagina and which are no obstacle to marital intercourse. Sims² gives several examples, among others that of a lady who had three children, conception being due to the use of an annular pessary during coitus; he mentions the case of other women who by the use of these pessaries till the fifth month were able to bring their pregnancy to the full term. If permanent cure cannot be obtained temporary replacement is easily effected by posture, the association of palpation with digital touch, and by the use of the sound. Provided this replacement lasts for some hours, or can be effected by the husband during intercourse, it is sufficient to make conception possible. I have seen several remarkable cases of this kind.

Every alteration in the cervix and os uteri (alteration in size, form and structure, ulcerations, induration, &c.) becomes a cause of sterility from the difficulty which it places in the way of the accomplishment of the cervical functions. The erection of the uterus excited by ovulation and coitus, as Rouget's researches show, plays an important part in conception. The effects of this erection on the cervical portion cause an increase in its size and induration, succeeded by relaxations and divergence of the walls, producing actual aspiration,³ as observed by Beck⁴ on the cervix of a multipara affected with prolapsus, which, when lightly touched, made five or six movements of aspiration within twelve seconds, accompanied by a voluptuous

¹ According to Sims (op. cit., p. 237), out of 250 married women, who had never had children, 103 were affected with anteversion and 68 with retroversion; out of 255 who had had children, but who had ceased to conceive before the menopause, 61 were affected with anteversion and 111 with retroversion; that is to say, out of 505 patients affected with sterility, natural or acquired, 343 presented deviations or flexions of the womb; besides, as about one half of these women had previously been pregnant, it is probable that their acquired sterility depended on the mechanical lesion of the organ.

² Op. cit., p. 281.

³ Wernich (*Beiträge zur Geburtskunde u. Gynäc.*, i, 296, 308).

⁴ How do the spermatozoa enter the uterus? (*Med. and Surg. Reporter*, 1872).

sensation. It is easy to understand the importance of any alteration which prevents the production of these movements.

Hypertrophy is the simplest of all these alterations. Sterility usually accompanies the hypertrophic elongation of the supra-vaginal portion which simulates prolapsus. Sterility is never more certain than when there is a concurrent alteration in the tubes or ovaries, often consecutive to hypertrophic elongation and prolapsus of the uterus. Huguier¹ says—"I never knew a woman to conceive when once the elongated uterus had been so prolapsed as to have caused complete procidentia and inversion of the vagina, by which I do not mean to say that it has never occurred; science would refute this assertion; all that is necessary to make conception possible being for the utero-ovarian canal to be free."

Hypertrophy of the vaginal portion is also a cause of inaptitude for conception, whether this slight hypertrophy is associated with marked conicity of the cervix, or whether it affects the whole of the cervix, or only attacks one lip. It was Lisfranc² who first recognised conicity of the cervix as a cause of sterility, and who recommended section of the cone as the best treatment. There is no doubt that it is usually in cases of conical cervix that the penis slips over the cervix, discharging the sperm in an accidental copulative sac in which it runs a great chance of being lost. It is certain also that in such cases the os, whether situated at the apex of the cone or on one of its surfaces, is very narrow and circular, and may be included in the class of orifices congenitally contracted, for which I have advised dilatation and division. A considerable sub-vaginal hypertrophy, whether with elongation or with tumefaction of the lower portion of the cervix, is also a cause of sterility. This cause is not absolute, but it only yields to surgical treatment; if therefore we can be sure that it is not incurable, we may also be certain that it cannot be cured without amputation of the hypertrophied portion. Dupuytren³ has mentioned cases in which excision of the cervix was followed by conception. I have seen a sufficient number of cases to convince me on this point, and I can affirm that this operation affords patients a great chance of being cured when there are no complications. It is the same with hypertrophy confined to one lip, for the orifice is then necessarily deviated, or partly obliterated, or at least concealed by the hypertrophied lip. If the reader wish to consider the causes of sterility due to hypertrophy of the cervix from an exclusively practical point of view, he may refer to what I have said as to the various forms which hypertrophy may assume, and which may be summed up in the following table:

¹ Op. cit., p. 123.

² *Clinique de la Pitié*, ii, 139.

³ F. G. Dumont, *Sur l'agénésie, l'impuissance et la dysgénésie*. Thèse de Paris, 1830.

- | | | | |
|--|---|--|--|
| 1. Hypertrophy of the whole cervix | } | Almost always morbid, even in virgins. | |
| 2. Partial hypertrophy of the cervix | | Supra-vaginal—Almost always morbid. | |
| | | Sub-vaginal | { Congenital.
Acquired. |
| | | Total | Very rare ; it causes incurvation. |
| 3. Hypertrophy of one segment, anterior or posterior, of the cervix. | { | | Of the central portion or of the pilaster, the remains of the raphe of the cervical portion. |
| | | Partial | Of the upper extremity (uterine uvula). |
| | | | Of the lower extremity . |

Hypertrophy of the whole of one of the segments causes incurvation of the cervix, the convexity corresponding to the hypertrophied segment (usually the posterior one), and, like flexion of the cervix, some-



FIG. 428.—Total hypertrophy of the posterior segment with incurvation. 1. section of the free extremity of the vaginal portion (1st part of the operation).



FIG. 429.—Total hypertrophy of the posterior segment. 2. median division of the remaining vaginal portion (2nd part of the operation).

times necessitates amputation of the lip corresponding to this segment (Fig. 428, 1), followed by division of the rest of the vaginal portion of this segment on the median line (Fig. 429, 2), so as to make a direct course for the penetration of the semen into the uterine canal¹ (see Fig. 283, p. 426).

Partial hypertrophy of one of the segments affecting the median portion has especially the effect of developing the size of the central pilaster, which is the trace of the raphe of the two primitive uteri, and of exaggerating the dovetailing of this central column of the *arbor vite* with that of the opposite segment, or of one of the secondary fleshy columns which are connected with it with the corresponding columns in the other segment. It is often indeed complicated with unequal hypertrophies, either sessile or partly pediculated, which give to the cavity of the cervix a broken and mammillated appearance. The best surgical treatment, in addition to resolvent medical treatment, consists

¹ Sims, op. cit., p. 214.

in introducing sponge tents repeatedly and in performing excision or simply *abrasion* of the dilated cervical cavity, as well as in the local application of resolvers, with which the sponge may be saturated or covered, and finally in the cauterisation of projecting portions of the hypertrophied organ which impede conception. In order to make



FIG. 430.



FIG. 431.

FIG. 430.—Valvular projection of the anterior portion of the isthmus.

FIG. 431.—Sims's curette. I have had the concavity sharpened, so as to use it for abrading the valvular projection of the isthmus, when caught in the terminal fenestra of the instrument. By suppressing one side of this fenestra we have a small pruning hook, still more convenient than the curette, and which I have frequently had occasion to use.

this cauterisation easily and to preserve the healthy segment from contact with or from the radiation of the actual cautery, I take care to seize the cervix with divergent tenaculum hook forceps or to introduce one of Récamier's large curettes, the blade of which serves as a conductor for the very small cautery employed for this purpose.

Partial hypertrophy affecting one of the segments at its upper extremity sometimes gives rise to a kind of valve or projecting tubercle (uterine uvula), which must not be confounded with a projecting angle of flexion, with which it sometimes coexists. The cervix having

been previously dilated by sponge tents, this little projection (Fig. 430, 3) may be abraded by means of a small hook with a somewhat malleable stem, to allow of variation of its inclination.

Partial hypertrophy of the lower extremity of one of the segments, *i.e.* one of the lips, has a different effect according to whether it most affects the lip on the side of the vaginal surface or on the side of the cervical cavity. If it affects it on the vaginal side it renders the lip exuberant, so that it projects beyond the orifice which is above or below it; hence the acuminate and rostral forms of the conical cervix, the blade and apron-like forms (by flexion) of the cuneiform cervix, and the snout-like forms of the cylindrical cervix; in such cases it should be cauterised or amputated. If the hypertrophy affects it on the side of the cervical cavity, it distends the opposite lip, attenuates it, becomes embedded in it, giving to the orifice a characteristic semi-lunar form (*see* p. 618, Figs. 355, 356). As a rule I content myself with applying the actual cautery, more or less deeply, to the centre of the hypertrophied lip, thereby provoking suppuration, which being followed by resolution and contraction, raises the convex border of this lip and rectifies the upper outline of the orifice (Fig. 193, p. 213). I have often seen conception follow this little operation. In such cases the patient should be advised to adopt the prone posture during coitus.

In case the difficulty of rectifying the uterine canal should suggest to any practitioner the idea of attempting *artificial fecundation*, I will here describe the best method of proceeding so as to preserve the vitality of the sperm and the characteristic movements of the spermatozoa. The male organ should be covered with a shield, care being taken not to apply it tightly. Coitus being terminated the ejaculated fluid will remain in the shield which is then cut and the fluid received into a small glass syringe (previously heated by being placed for a few minutes in water at a temperature of 40° C.) furnished with a metallic or gutta-percha sound, by means of which and by using great care it will be easy to make it penetrate into the cavity; the patient should then rest for a day.

Rigidity of the cervix may be the consequence of long-standing continuous congestion, or of indurated metritis. It should be treated successively by antiphlogistics, glycerine, alkalines, and resolvents capable of softening the uterine tissue, then by sponge tents and scarifications, ignipuncture and, lastly, by division and, if necessary, by section of a pyramidal fragment of the tissue of one of the lips. *Organic alterations*, fibroids, polypi and cancer, although not necessarily causes of sterility (I have mentioned cases of pregnancy in all these cases), considerably hinder the uterine functions, preventing in most cases the contact of the sperm with the ovum, or uterine pregnancy, or the continuation of a pregnancy beyond a few weeks.

Lastly, *abundant or abnormal secretions* may prevent conception in two ways: mechanically or chemically. By a purely mechanical action an abundant leucorrhœa filling the uterus (even without going so far as to form hydrometria and pneumatosis), or a viscous, coherent,

tenacious leucorrhœa, completely obstructing the cervix by a gelatinous plug (analogous to that of pregnancy), make conception very difficult, either by preventing the semen from penetrating into the uterine cavity or by expelling the sperm (supposing it has penetrated) by their abundance and the uterine contractions which impel them naturally towards the vagina.¹ Chemically, the abnormal secretions of the utero-vaginal fluid (from the mucus of the womb being too alkaline or from that of the vagina being too acid) may kill the spermatozoa.² It is probable that the latter, unless very abundant and very acid, has not much action on the mass of the ejaculation, the central portion of which it can hardly reach; but it is probable that the former has an injurious influence on the relatively small quantity which penetrates into the uterine cavity.³ In a number of cases the abundance of the leucorrhœa and even its purulence does not prevent conception.

Tubal maladies cause sterility by preventing the ovum from being received and the sperm from being transported by these canals, or both these elements from coming into contact and from undergoing the reciprocal influence known as fecundation. They may exist either without or within these organs.

2. *Physiological obstacles to conception.*—They depend on congenital or acquired physiological imperfection or on functional disorder caused by some morbid state. With regard to disorder of the normal physiological act, it may either be one of defect or excess. I have already mentioned the conditions of erection, general muscular contraction and orgasm in which the genital economy of woman should be at the time of periodical dehiscence, menstruation and coitus; there is no doubt that the divergence of the uterine walls, and the dilatation of its cavities produced by erection, greatly facilitate the entrance of the sperm. It is easy to understand that defect of orgasm, indicated by the absence of any voluptuous sensation, suffices to prevent erection and consequently the bringing into play of utero-tubal conditions equally favorable to the transport of the ovum and to that of the sperm. We do not know all the conditions connected with the accomplishment of the internal acts of this function; for instance it has been asserted that women have conceived in spite of themselves, after rape, or unknown to themselves, during intoxication and sleep, or even after intercourse to which they had consented, but which had given them no pleasure. Although these facts can only be received with reserve I can affirm that I have known women who not only have never experienced the least pleasure, but have felt positive repugnance for an act which they only performed from duty, and yet have had several pregnancies. That is undoubtedly because vital orgasm, erection,

¹ Jobert de Lamballe published a work on dropsy of the cervix and its influence on conception in 1843.

² Donné, *Expériences sur les animalcules spermatiques et sur quelques-unes des causes de la stérilité de la femme* (Gaz. méd., 1837). It should be remembered that alkaline fluids excite the movements and prolong the life of spermatozoa.

³ Joulin, op. cit., p. 162.

and the involuntary movements of the uterus and tubes may escape sensibility and perception, and may be produced independently of all voluntary participation and of all voluptuous feeling. These cases, however, are exceptional. The proof of this is, that in most women the voluptuous sentiment is only gradually awakened, as if by the education of a new sense, and that in such cases conception only occurs some time after marriage. According to Spencer Wells, out of seven fertile marriages delivery only occurs four times before eighteen months.

When alteration of the physiological acts which influence impregnation depends on a definite *morbid condition* it is easier to seize the indications and to apply an appropriate treatment. These morbid states, or rather the general affections which keep them up (inflammation, rheumatism, scrofula, herpetism, &c.), usually cause sterility on account of the material alterations which they effect in the tissues of the internal sexual organs, such as tumefaction, ulceration, &c., or from alterations of secretion, such as leucorrhœa, or from hæmorrhage.¹ These morbid states often produce functional disorder, amenorrhœa, dysmenorrhœa, pains, absence of desire, &c.; hence the repugnance which a number of women affected with uterine disease experience for coitus.

III. *Inaptitude for germination or ovulation*.—This is the most certain cause of sterility strictly speaking; for inaptitude for fecundation (whether for the transport and union of germs or for the reception of the semen) is only an accident preventing the evolution or development of the germ, but in nowise affecting aptitude for reproduction. Ovulation is the best proof that a woman can give of her aptitude for procreation. If the ova are formed normally in the ovary, if they reach their maturity there and are expelled periodically, the woman furnishes the reproductive element peculiar to her, and thereby gives the best proof of reproductive capacity. If this physiological act cannot be established, or is suspended, or extinct, the woman becomes sterile. Sterility in such a case is often permanent; it may however be relative or temporary: the former depends on the absence of the reproductive organ, on defective development, atrophy, or on an organic alteration or disorganisation of the ovary; the latter on the suspension of the reproductive function of this organ under the influence of a local pathological state, of a more or less considerable partial degeneration of its tissue, or else on the reaction which it experiences from a general morbid affection, from the debilitating influence which is exercised upon it by a serious disorder of the health and constitution.

Menstruation in its relations with sterility.—The causes of sterility which I have just rapidly reviewed are really so numerous that, in order to diagnose them, it is necessary to follow an artificial method based on

¹ Menorrhagia is particularly formidable on account of its tendency to be reproduced when the ovum is newly fertilised, in which case there is abortion. In these instances sterility does not arise from defective conception but from some impediment to gestation.

the alterations which the most apparent sexual phenomenon, menstruation, may undergo. We should therefore, first of all, ask a sterile woman whether this function is absent, anomalous, or regular.

Absence of menstruation may depend on congenital absence, atrophy, arrest of development, or imperfection of some portions of the sexual economy, or on accidental lesions, suppuration, gangrene, adhesions, or obliterations of the same parts. The prognosis is almost always serious as regards the fertility of the woman; except in slight uterine atrophy there is hardly anything to hope from treatment. Absence of menstruation may be associated, although rarely, with normal conformation of the genital organs, merely constituting a physiological anomaly or imperfection, as is proved by the fact that women who have never menstruated have had children. Rondelet and Joubert¹ have both published cases; the former of a woman, who had twelve children, the latter of one who had eighteen, neither of whom had ever menstruated; Colombat² knew another who had a child; Flechner³ speaks of a woman in similar conditions having had six pregnancies in thirteen years; Barbieri,⁴ Bruck⁵ and Elsasser have each seen a case of the same kind. Stark's⁶ work on this subject should be consulted. It must however, be admitted that the physiological absence of menstruation is usually accompanied by sterility, and it is not certain whether it does not sometimes depend on a serious disorder, not only of the function but of the sexual economy. Therefore when consulted about a case of this kind, we cannot be too careful in giving an opinion, which cannot be based on a complete examination of organs inaccessible to our investigations.

Anomalies of menstruation are produced either by mechanical causes or morbid states. The former are manifested under the form of menstrual retention, deviated menstruation, dysmenorrhœa, &c.; the physician should discover the congenital or acquired origin and the superficial or internal seat of the obstacle to the free discharge of blood. The latter include amenorrhœa, leucorrhœa, dysmenorrhœa, menorrhagia, &c.; it is important to know whether they depend on a merely local or a general condition, whether there is disease of the uterine mucous membrane, deviation or flexion of the womb, active or passive congestion, &c.; or whether the patient is suffering from chlorosis, anæmia, plethora, organic disorders, scrofula, constitutional syphilis, or any other diathesis. As these maladies do not always produce menstrual disorders, they ought to receive great attention when they do so and they then indicate the necessity for the association of general with local treatment. There is one which is all the more deserving of attention because apparently it does not prevent conception. I mean menorrhagia or metrorrhagia;

¹ *Erreurs populaires*, liv. ii, ch. 1.

² *Op. cit.*, p. 34.

³ *Gaz. méd.*, 1841, p. 91.

⁴ *Gaz. méd.*, 1843, p. 207.

⁵ *Allgem. medic. central. Zeitung*, 1854, No. 14.

⁶ *Des grossesses survenues en l'absence de la menstruation*, Stark's *Archiv für die Geburtshülfe*. Jena, 1787.

these are not in one sense absolute causes of sterility, because when hæmorrhage is arrested conception may occur (and frequently does); but from their tendency to be reproduced periodically, or under the influence of the slightest provocation, or even without any known cause, they expel the recently impregnated ovum, causing early abortion and recurring so frequently as to be equivalent to sterility.

Lastly, whilst *regularity* of menstruation cannot coexist with certain malformations and organic disorders, or even with certain morbid conditions just described, it may do so with lesions of the uterine economy, with diseases of the neighbouring organs, or with general affections which cause sterility.

The true cause of sterility, therefore, must be sought in one of the conditions just enumerated. If it cannot be so explained, it would yet be unjustifiable to assume the existence of one of the causes hypothetically suggested by investigators of this subject, such as defective sympathy or physiological incompatibility between the husband and wife. If we succeed in identifying the cause, it will still be necessary to act with great caution; holding out only moderate hopes to those whom we expect to cure; while we abstain from disclosing abruptly or unnecessarily to others the fact that in their case there is little ground for a favorable prognosis.

INDEX

- Abdominal tumours, 774
 Ablation of polypi, 229
 — of fibroids, 229
 Abortion, influence of, on uterine disease, 236
 Abrasion of uterine fungous growths, 225
 Abscess, pelvic, *v.* Peri-uterine inflammation.
 — peri-uterine, 556, 566
 Acid nitrate of mercury as a uterine caustic, 209
 Adenitis and angioleucitis, peri-uterine, 537
 Age, influence of, on the development of uterine disease, 238
 Amenorrhœa, 259
 — symptomatic, 260
 — idiopathic, 261
 — sympathetic, 261
 — psychical, 261
 Amputation of the cervix uteri, 387
 Anæmia, symptomatic of uterine disease, 104
 Anatomical characteristics of the sexual system in woman (variability of), 3
 Anomalies of the genital apparatus, 65
 — of the ovaries, 70
 — of the tubes, 73
 — of the uterus, 75
 Apoplectic dysmenorrhœa, 323
 Appearance, external, of abdomen (signs of uterine disease furnished by), 122
 Appendages, inflammation of, *v.* Peri-uterine inflammation.
 Arsenical powder of Friar Côme, 210
 Arteries, helicine, of uterus, 36, 47
 Ascent of uterus, 355
 Ascites, uterine, 581
 Asthenia, a characteristic of certain uterine diseases, 156
 Atresia, vulval, 271, 274
 — vaginal, 271, 275
 — uterine, 271, 275
 — congenital (imperforation), 271
 — accidental (obliteration), 272
 Atrophy of the womb, 620
 — excentric, 620
 — concentric, 621
 Auscultation, a means of diagnosis, 121
 Autoplasty, gynæcological, 229
 — after amputation of cervix, 229
 — of cervical orifice, 316
 Ballotement in diagnosis of uterine disease, 121
 Baths, use of, in the treatment of uterine disease, 176
 — hot, 176
 — cold, 179
 — medicated, 183
 Belts in the treatment of uterine diseases, 190
 — abdominal, 190
 — Courty's, for methodic compression, 191
 — hypogastric, 191
 Bleeding, 169
 Blisters to the cervix, 190
 Cancer of the uterus, 692
 — diagnosis, 692
 — subjective signs, local symptoms, pain, 692
 — hæmorrhage, 693
 — cauliflower excrescence, 698
 — distinction between scirrhus and encephaloid, 700
 — treatment, 702
 — — by caustics, 703
 — — by amputation of the cervix, 704
 — — by ecrasement, 705
 — — by excision, 707
 Cancroid, *v.* Cancer of the uterus.
 Carbonic acid, application of, to cervix, 205
 Castration, 770
 Cataplasms to cervix, 202
 Catarrh, uterine, *v.* Leucorrhœa.
 — of the Graafian follicles, 738
 Cauliflower excrescence, 698

- Causes, predisposing, of uterine diseases, 234, 238
- Caustics, liquid, 209
- acid, 209
 - alkaline, 209
 - solid, 209
 - canquoïn, 209
 - Vienna paste, 209
 - chloride of zinc, 210
 - Friar Côme's arsenical powder, 210
 - nitrate of silver, 210
- Cauteries, 211
- gas, 215
 - galvanic, 216
 - Paquelin's thermo-cautery, 216
- Cauterisation of the cervix, 208
- — by potential cautery, 209
 - — by actual cautery, 211
 - — by ignipuncture, 211
 - — by gas, 215
 - — by electrolysis, 216
 - of uterine cavity, 218
 - — by intra-uterine injections, 219
 - — by nitrate of silver crayon, 221
- Cavity, pelvic, division of, 24
- uterine (means of exploration of), 147
- Celibacy, influence of, on uterine diseases, 238
- Cellular tissue of broad ligaments, 26
- Cellulitis, pelvic, *v.* Peri-uterine inflammation.
- Cervix uteri, 28, 32, 40
- anomalies of, 80
- Changes of position, 343
- of the rectum, due to development producing changes of situation in the uterus (Freund), 345
 - displacements, 346
 - deviations, 388
 - flexions, 407
 - inversion, 441
- Characteristics, general, of uterine diseases, 233
- their frequency, 233
 - preponderating influence of predisposing causes, 233
 - their double nature, general or diathetic and local, 246
 - their chronicity, 249
 - difficulty of cure, 250
 - diversity, 251
- Chlorate of potassium, its use in membranous dysmenorrhœa, 330
- Chloride of zinc for cauterisation of uterus, 210
- Chloroform, vaginal injections of, 206
- Chlorosis, symptomatic of uterine diseases, 104
- Chronicity of uterine maladies, 157, 249
- Cicatrization after cauterisation, applications for hastening, 218
- Classification of uterine diseases, 253
- Climate in the treatment of uterine diseases, 169
- Cloaca, 58
- Collodion, painting the cervix with, 203
- Colpodesmorphy, 382
- Colporaphy, 383
- Complexity of uterine diseases, 252
- Complications as a source of indications in treatment, 160
- of uterine diseases, 248
- Congestion, uterine, 466
- — physiological and pathological, 466
 - — idiopathic and symptomatic, 466
 - — active and passive, 467
 - — anatomical changes consequent on, 467
 - — diagnosis, 467
 - — subjective signs, 467
 - — objective signs, 468
 - — treatment, 469
 - peri-uterine, *v.* Peri-uterine inflammation.
- Constipation, its disastrous effects (copræmia), 105, 106
- Constitution, influence of the, upon the development of uterine diseases, 239
- Contusions of the uterus, *v.* Traumatism.
- Copræmia, 106
- Corpus luteum, 9
- Cough, uterine, 102
- Cupping in uterine diseases, 170, 173, 226
- Cura famis*, 186
- Cure, spontaneous, rare in uterine diseases, 151, 250
- Curette, Récamier's, 225
- Sims's, 225
 - buttonhook, 225
 - Courty's, 226
- Curvature of the uterus, 409
- Cysts of the ovary, 733
- — composition, 734
 - — unilocular, 734
 - — multiple or multilocular, 734
 - — compound, 736
 - — origin and development, 738
 - — in the newly born, 739, *note*
 - — in the married and single, 739
 - — duration, 742
 - — termination, 742
 - — deterioration of health, *facies ovariana*, 743
 - — treatment, 749
 - — ovariectomy, 753
 - tubo-ovarian, 780
 - hydatid, 782
- Dépôts laitoux*, 556
- Descent of uterus, *v.* Prolapsus.
- Deviation of the menses, 292
- diagnosis, 293
 - treatment, 298

Deviations, 388
 — three degrees, 388
 — anteversion, retroversion, and latero-
 version, 388
 Diagnosis of uterine diseases in general,
 96
 Diathesis, influence of, on the develop-
 ment of uterine diseases, 240
 Digestion, disorders of, 99
 Dilatation in stenosis of the cervix, 309
 — by dilating instruments, sounds and
 bougies, 309
 — by sponge tents, 310
 — by incision, 310
 Dilator, uterine, of Lemenant-Deschenais,
 147
 — — of Mathieu, 147
 — — of Busch and Huguier, 147
 — — of Aussandon, 148
 — — intra-uterine pessary, 148
 Diseases of the appendages, 714
 Dispareunia, 110
 Displacements, 346
 — of the ovaries, 346
 — of the Fallopian tube, 348
 — of the uterus, 344
 — — (hernia), 351
 — — horizontal displacements, 354
 — — ascent, 355
 — — descent, 356
 Diversity of uterine diseases, 251
 Division of cervix, 227, 311
 Double character of uterine diseases,
 diathetic and local, 246
 Douglas, folds of, pouch of, 23, 24
 Dropsy of the uterus, 581
 — encysted of the ovary, 733
 — profuent of the tubes, 780
 Dysmenorrhœa, 300
 — idiopathic, 301
 — congestive, 302
 — ovarian, 302
 — treatment, 303, 309, 328
 — mechanical, 305
 — obstructive, 305
 — dilatation of cervix, 309
 — incision of cervix, 310
 — division of cervix by elastic ligature,
 315
 — autoplasty, 316
 — membranous, 319
 — villous, 322
 — apoplectic, 323

 Ectropion of the cervix, 441
 Electricity, use of, 184
 Elytroraphy, 383
 Emaciation symptomatic of uterine dis-
 eases, 104
 Encephaloid of uterus, *v.* Cancer.
 Endometritis, 477
 — exfoliative, 323, *note*
 Engorgement, uterine, 472

Engorgement, uterine, anatomical cha-
 racters and definition, 472
 — — diagnosis, 473
 — — treatment, 474
 Episio-perineoraphy, 381
 Episioraphy, 380
 Epispastics in treatment of uterine dis-
 eases, 189
 Epithelioma of uterus, *v.* Cancer of
 uterus.
 Erectility of uterus, 47
 — of the ovary, 48
 — erection produced artificially on the
 cadaver, 48
 — absence of erectility in vagina and
 Fallopian tube, 48
 — of bulbs of the vagina and of the
 clitoris, 49
 — connection between utero-ovarian
 erection and coitus, ovulation and
 menstruation, 49
 Eruptions on the cervix uteri, *v.* Ulcera-
 tions.
 — different forms, as in cutaneous
 diseases, 635
 Evacuants in the treatment of uterine
 diseases, 174
 Eversion of the cervix, 441
 Examination, complementary means of
 external, 120
 — percussion, 120
 — fluctuation, 121
 — ballottement, 121
 — change of posture, 121
 — auscultation, 121
 — external appearance of abdomen,
 122
 — exploratory puncture, 122
 — tapping, 122
 Exercise in the treatment of uterine
 diseases, 167
 Exfoliation of the uterine mucous mem-
 brane, 319
 Exfoliative endometritis, 323, *note*
 Exometritis, puerperal, 503
 Exploration of the uterine cavity (com-
 plementary means), 147
 Extirpation of normal ovaries (Battey's
 operation), 770
 Extra-uterine pregnancy, 783
 — differential diagnosis, 783
 — treatment, 785
 Exutories in the treatment of uterine
 diseases, 189

Facies ovariana, 743
 — *uterina*, 105
 Fallopian tube, 13
 — development of, 56
 — anomalies of, 73
 — hernia of, 348
 — inflammation of, 526
 — and ovary, inflammation of, 530
 — tumours of, 778

- False conceptions, *v.* Moles.
 Fibroids, *v.* Fibrous tumours.
 Fibromata, *v.* Fibrous tumours.
 Fibrous tumours of the uterus, 648
 — interstitial, 649, 657
 — sub-mucous, 649, 658
 — sub-peritoneal, 649, 659
 — their influence upon conception, pregnancy and delivery, 654
 — influence of pregnancy upon, 655
 — diagnosis, 655
 — prognosis, 664
 — medical treatment, 665
 — surgical treatment, 667
 — hysterectomy, 668
 — treatment of, during pregnancy, 671
 — — delivery, 671
 Fistulæ, congenital, 61
 Flexions of the uterus, 407
 — congenital, 407
 — accidental, 407
 — simple, 408
 — complicated, 408
 — seat of, 408
 — degree of, 409
 — curvature, 409
 — diagnosis, 417
 — subjective signs, 417
 — common symptoms, 418
 — objective signs, 419
 — treatment, 420
 — reduction, 421
 — retention, 422
 — mechanical means of retention, 422
 — flexion of the cervix, 425
 — ante flexion, 428
 — retro flexion, 433
 — latero flexion, 431
 — torsion, 431
 — changes in the uterine tissue, 434
 Floating tumours of the abdomen, 782
 Fluctuation, signs of uterine disease furnished by, 121
 Fluor albus, *v.* Leucorrhœa.
 Fluxion, 461
 — diagnosis, 462
 — treatment, 463
 Fluxions, methodical treatment of, applied to uterine diseases, 172
 Forceps, Courty's, 201
 — tenaculum, 208
 Frequency of uterine diseases, 233
 — relative, of uterine diseases, 255
 Functional disorders, 257
 Fungosities, uterine, *v.* Granulations.
 Gaertner's canal, 57
 Galvanic stem pessary, 200
 Gas, application of, to cervix, 205
 — — carbonic acid, 205
 — — apparatus for, 206
 Gastrotomy, 772
 Genital system of woman, *v.* System.
 Giralddes, *corpus innominatum* of, 57
 Glycerine, application of, to cervix, 202
 Graaf, De, vesicles of, 5
 Granulations, uterine, 623
 — — predisposing causes, 623
 — — influence of diathesis, 624
 — — varieties, 627
 — — treatment, 632
 Hæmorrhage, uterine, 334
 — idiopathic, 335
 — symptomatic, 335
 — diagnosis, 336
 — predisposing causes, 336
 — determining causes, 337
 — symptoms, 337
 — treatment, 338
 — hemostatics, 341
 Hæmorrhage, pelvic, 714
 — — tubal, 715
 — — ovarian, 716
 — — from the utero-ovarian plexus, 717
 — — hæmorrhagiparous pachyperitonitis, 717
 Hematocele, peri-uterine, 719
 — retro-uterine, 719
 — latero-uterine, 720
 — ante-uterine, 720
 — hematoma, 720
 — modifications undergone by the effused blood, 721
 — diagnosis, 722
 — prognosis, 731
 — treatment, 731
 — puncture, 733
 Hermaphroditism, true, 67
 — lateral, 69
 — vertical or double, 69
 — transverse, 69
 — coincides with imperfect development, 69
 — apparent, 70
 — female, 70
 — male, 70
 Hernia of uterus, 351
 — — during pregnancy, 351
 — — of the linea alba, 351
 — — of the unimpregnated uterus, 352
 — — inguinal, 353
 — — crural, 353
 — — umbilical, 353
 — — ventral, 353
 — — diagnosis, 354
 — — treatment, 354
 — — of the ovary, 346
 — — inguinal, 347
 — — crural, 347
 — — ischiatic, 347
 — — umbilical, 347
 — — simple and double, 347
 — — congenital (inguinal), 348
 — — accidental (generally crural), 348
 — — Fallopian tube, 348
 — — diagnosis, 349

- Hernia, treatment, 350
 Hydatid cysts, 782
 Hydrometria, 581
 Hydrorrhœa, 580
 Hydrotherapy in the treatment of uterine disease, 179
 Hymen, *v.* Vulva.
 Hypertrophic tendency of the uterus, its part in the production and cure of uterine disease, 243, 244
 — elongation of the cervix, 370
 Hypertrophy, uterine, 590
 — — common, 590
 — — special, 591
 — — essential, 591
 — — arrested involution, 594
 — partial, of cervix, 598
 — — subvaginal, 598
 — — supra-vaginal, 609
 — — limited to one segment or to one lip, 616
 Hysteralgia, 330
 Hysterectomy, 228
 Hysteria symptomatic of uterine disease, 101
 Hysterocele, 351
 Hysteromata, *v.* Fibrous tumours.
 Hysterotome, simple, 228, 311
 — double, 228, 311
 Hysterotomy, 310
 — Porro's operation, 773

 Ice, plugging with, 203
 Idiometritis, 482
 Ignipuncture of the cervix, 211
 Impotence, 788
 Inclination of the uterus, 388
 Incurvation of the uterus, 407
 Indications to fulfil in the treatment of uterine diseases, 151
 Inertia, uterine, 100
 Infarctus (engorgement), 472
 Infecundity or inaptitude for impregnation, 791
 Inflammation, necessity of subduing, in the treatment of uterine diseases, 156
 Inflammation, the only contra-indication to the use of the cautery, 217
 Inflexions of the uterus, 407
 Infraction of the uterus, 409
 Injections, vaginal, 176
 — intra-uterine, 219
 — hot, in metrorrhagia, 341
 Injuries of the uterus, *v.* Traumatism.
 Inversion, uterine, 441
 — — its different degrees, 442
 — — incomplete or partial, 442
 — — complete or total, 442
 — — causes, 443
 — — mechanism, 445
 — — diagnosis, subjective signs, 445
 — — objective signs, 446
 — — differential diagnosis, 447

 Inversion, uterine, treatment, 477
 Involution of the uterus, arrest of, 594
 — — subinvolution, 595
 — — superinvolution, 595
 — — diagnosis, 595
 — — subjective signs, 596
 — — treatment, 596
 Irrigation, vaginal, 178
 — — single vaginal irrigator, 178
 — — double vaginal irrigator, 178
 Irritable uterus, 331
 Isthmus, torsion of the, 309, 414

 Lactation, neglect of, its influence on the development of diseases, 237
 Laminaria digitata (tents of) for dilatation of the cervix, 149
 Leiomyomata, *v.* Fibrous tumours.
 Leucorrhœa, 569
 — idiopathic, 573
 — symptomatic, 575
 — herpetic or dartrous, 575
 — catarrhal, scrofulous, 576
 — vulval, 576
 — vaginal, 576
 — uterine, 576
 — differential diagnosis of the different forms of infantile leucorrhœa, 577
 — hydrorrhœa, 580
 — treatment, 582
 Ligaments of the uterus, 20
 — — means of suspension, 20
 — — broad ligaments, 20
 — — round ligaments, 22
 — — utero-sacral, 23
 — — utero-vesical adhesions, 23
 — — suspensory ring, 23
 — broad (tumours of), 780
 — — fibrous tumours and myomata of, 780
 — — cysts of, 781
 Ligature, elastic, for section of the cervix, 315
 Lotion, vaginal, 177
 Lymphatics of the uterus, 36
 — their importance, 37

 Means of exploration of the uterine cavity, 147
 — intra-uterine speculum, 148
 — uterine dilator, 148
 Mechanical dysmenorrhœa, 305
 Medications employed in the treatment of uterine diseases, 161
 — common, 162
 — special, 163
 Membranous dysmenorrhœa, 319
 Menorrhagia, 334
 Menstrual disorders, 257
 Menstruation, 257
 — its influence upon uterine disease, 235
 Mensuration, abdominal, 122
 Methods of treatment, 160

- Methods of treatment, generally analytical and empirical, 161
- Metritis, 476**
- pathological anatomy, 476
 - divisions, 480
 - causes, 482
 - course, 484
 - subjective signs, 486
 - local symptoms, 486
 - general symptoms, 487
 - objective signs, 489
 - uterine abscess, 493
 - table of differential diagnosis, 494
 - treatment, 497
 - — of complications, 501
 - — of metrorrhagia, 501
 - — of leucorrhœa, &c., 502
 - puerperal, 503
 - of the fundus, 506
 - of the cervix, 506
 - endometritis, 507
 - parenchymatous metritis, 508
 - treatment, 509
- Metrorrhagia, 334**
- Metrotome, 227**
- Moles, uterine, 686**
- — fleshy, 687
 - — vesicular or hydatidiform, 687
 - — diagnosis, 688
 - — treatment, 689
- Morbid states without neoplasm, 461**
- Mucous membrane of the uterus, 38**
- of the fundus, 38
 - its tubular glands, 39
 - its periodical thickening, 40
 - of the cervix, 40
 - its glands, 40
 - Naboth's eggs, 40
 - mucus of the uterus, alkaline, 40
 - uterine (monthly formation of), 324
- Müller's ducts, 56**
- their separation, 58
 - their approximation, 58
 - their union, 58
 - anomalies of development, 75
- Muscles of the uterus, 40**
- three layers, 43
 - their continuity with the muscular layers of the tubes, 43
 - their connections with the ovaries and oviducts by the muscular layer of the broad ligament, 45
- Myomata of the uterus, v. Fibrous tumours.**
- Naboth's eggs, 40**
- Necessity for treating uterine maladies, 151**
- Neoplasms (morbid states without), 460**
- Nerves of the uterus, 37**
- Nervous disorders, 100**
- Neuralgia, symptomatic of uterine diseases, 101**
- uterine, 330
- Nutrition, disorders of, symptomatic of uterine disease, 104**
- Obesity, symptomatic of uterine disease, 105**
- Obliquity of the uterus, 388**
- Obliteration of the vagina, 387**
- Edema, acute purulent peri-uterine, 532**
- Oöphoritis, 510**
- Ovaries, anatomy of, 4**
- ectopia of, 72, 346
 - extirpation of (Battey's operation), 770
- Ovarioncia, 346**
- Ovariectomy, 753**
- indications for, 754
 - pregnancy as a complication, 754
 - contra-indications, 755
 - preparatory treatment, 756
 - adhesions as contra-indications, 756
 - six principal stages of the operation, 757
 - treatment of adhesions, 760
 - immediate consequences, 765
 - accidents, 766
 - shock, 766
 - exhaustion, 766
 - hæmorrhage, 767
 - purulent infection, 767
 - antiseptic precautions, 768
 - remote consequences, 769
- Ovaritis, 510**
- Ovary, cysts of, 733**
- solid tumours of, 774
- Oviducts, 13**
- Ovisacs, 6**
- Ovum, 8**
- Pad, perineal, 192**
- Pain, 107**
- symptomatic of uterine diseases, 107
 - spontaneous, 107
 - caused by mode of decubitus, 108
 - by sitting, 108
 - by standing, 109
 - by movements and walking, 109
 - by coitus, 109
 - by tight garments, 110
 - elicited artificially, 110
 - by movement, 110
 - by palpation, 110
 - by the touch, 110
 - three principal seats of, 111
 - iliac, 111
 - lumbar, 111
 - hypogastric, 112
 - three secondary seats of, 112
 - anal, 112
 - vaginal, 112
 - pelvic, 112
 - radiating, 112
 - continuous, 113
 - intermittent, 113
- Painting the cervix with collodion, 203**

- Palpation, abdominal, 118
 - rectal, 131
- Paralysis symptomatic of uterine disease, 103
- Parametritis, 531. *v.* Peri-uterine inflammation.
- Parturition, influence of, on the development of uterine disease, 236
- Pelvic cavity, division of, by the broad ligaments, 24
 - peritonitis, 534. *v.* Peri-uterine inflammation.
 - tumours, 774
- Perforation of the hymen, 228
- Perimetritis, 531, 534
- Peritoneum, sero-purulent cysts of the, 781
- Peritonitis, peri-uterine, 534
- Peri-uterine inflammation, 531
 - adenitis and angioleucitis, 537
- Pessaries, 193
- Phlegmon of the broad ligament, 533
 - peri-uterine, 535
- Physometria, 582
- Pneumatosiis, 582
- Polypi of the uterus, 673
 - fibrous, 673
 - mucous, 673
 - vascular, 674
 - diagnosis, 674
 - treatment, 677
- Position of patient for operations, 207
- Posture, signs furnished by change of, 121
- Pregnancy, in relation to the symptoms of uterine disease, 107
 - influence of, on the development of uterine diseases, 236
 - extra-uterine, 783
 - — diagnosis, 783
 - — treatment, 785
 - — modes of termination, 785
- Prolapsus uteri, 356
 - degrees of, 356
 - cystocele and rectocele, 359
 - of the whole uterus or of the cervix only, 357
 - anatomo-pathological alterations, 357
 - causes, 360
 - relaxation of suspensory ligaments, 361
 - frequency, 362
 - diagnosis, 363
 - subjective signs, 363
 - objective signs, 366
 - differential diagnosis, 368
 - treatment, 370
 - hypertrophic elongation (prolapsus without procidentia of the fundus), 370
 - reduction, 373
 - retention, 374
 - episioraphy, 380
- Prolapsus uteri, episio-perineoraphy, 381
 - colpodesmoraphy, 382
 - elytroraphy or colporaphy, 383
 - obliteration of the vagina, 387
 - amputation of the cervix, 387
- Prolapsus of uterus without descent of the fundus (Virchow), 370
- Pruritus, vulval, 118
- Puerperal metritis, 503
- Puncture, exploratory, 229
- Purgatives, use of, 174
- Rectal palpation, 131
- Reduction of prolapsus, 373
 - of flexions, 420
 - of inversions, 449
- Regimen as a means of treatment, 168
- Resolvents, their use, 184
- Retention of the menses, 270
- Ring, suspensory, of the uterus, 23
- Rosenmüller (organ of), 56
- Salpingitis, 526
- Scirrhus of uterus, 699, 701
- Sedatives in the treatment of uterine diseases, 188
- Serous membrane of uterus, 38
- Signs, presumptive, of uterine disease, 98
 - furnished by direct examination of the genital organs, 118
- Situation and structure of the uterus, influence of, on development of uterine disease, 234
- Sound, uterine, 144
 - — its use as a means of diagnosis, 144
 - — its invention, 144
 - — mode of introducing, 145
- Speculum, Fergusson's, 134
 - trivalve, 134
 - bivalve, 135
 - quadrivalve, 135
 - Cusco's, 136
 - Jobert's, 136
 - Bozeman's, 137
 - Sims's, 137
- Sponge tents, method of preparing, 148
 - their introduction, 149
 - exploration of uterus after dilatation by, 149
- Stenosis of cervix uteri, 305
- Sterility, 787
 - symptomatic of uterine disease, 107
- Strangury, uterine, 302
- Subinvolution, 595
- Superinvolution, 621
- Suppositories, 204
- Suspension, means of, of the uterus, 20
 - — of the fundus, 20
 - — of the cervix, 23
- Suspensory ring of the uterus, 23
- Symptoms, general, of uterine disease, 98
 - local, of uterine disease, 105
 - of neighbourhood, 105

- Syringe, uterine, 219
 System, genital, of woman, 3
 — — its constant mutability, 3
 — — its development, 55
 — — comparison of, with male genital system, 62
 — — teratology, 65
- Teratology of the sexual organs, 65
 Therapeutics of uterine diseases in general, 96
 Thermocautery of Paquelin, 216
 Tonics in the treatment of uterine diseases, 186
 Topical applications to the cervix, 203
 Torsion of the isthmus, 309, 430
 Touch, vaginal, 123
 — rectal, 130
 — vesical, 133
 Traumatism of the uterus, 483
 Treatment of uterine diseases in general, 151
 Tubercle of uterus, 689
 Tubo-ovariitis, 530
 Tumours, fibrous, of uterus, 648
 — of the annexes and pelvic cavity, 774
 — solid, of ovary, 774
 — of Fallopian tubes, 778
 — of broad ligaments, 780
 — floating, of abdomen, 782
 Tympanitis, uterine, 582
- Ulcer of pregnancy, 640
 — of uterine catarrh, 640
 — of chronic metritis, 641
 — dartsous, 641
 — scorbutic, 641
 — scrofulous, 641
 — syphilitic, 641
 — cancerous, 642
- Ulcer of pregnancy, rodent, 642
 — diphtheritic, 643
 Ulceration and ulcers of the cervix uteri, 634
 Urethra, female, 65
 Urogenital groove, 61
 Uterine cough, 102
 Uterus, 16
 — changes in, at different ages, 28
 — structure of, 36
 — deficiens, 75
 — unicornis, 75
 — duplex, didelphis, 76
 — bicornis, 76
 — cordiformis, 78
 — globularis, 78
 — septus, bilocularis, bipartitus, 79
 — subseptus, semipartitus, 79
 — embryonic, fœtal, infantile, 79
- Vagina, 49
 — absence of, 86
 — anomalies of, 86
 — double, 88
 Veins, uterine, 36
 Versions of the uterus, 388
 — treatment of, 397
 Vesical irritation symptomatic of uterine disease, 106
 Vesicles of De Graaf, 6
 Villous dysmenorrhœa, 322
 Vulva, 49
 — glands of, 53
 — anomalies of, 89
 — absence of, 89
 Vulval pruritus, 118
- Waters, mineral, in treatment of uterine disease, 182
 Wolfian bodies, 55

ERRATA.

- Page 79, line 3rd, for "bipartitis," read "bipartitus."
 " 118, " 12th, for "pruritis," read "pruritus."
 " 302, note 2, for "Philosophical," read "Obstetrical."
 " 304, line 16th from bottom, for "attractions," read "attractives."
 " 392, note 1, for "nMario," read "Marion."
 " 498, line 12th from bottom, for "mauve," read "marshmallow."
 " 568, " 2nd, for "is," read "are."
 " 628, " 2nd from bottom, for "hysteralgia uterine colics, and" read "hysteralgia and uterine colics."
 " 642, " 18th from bottom, for "abscess," read "abscesses."

Catalogue B]

*London, New Burlington Street
July, 1882*

SELECTION

FROM

J. & A. CHURCHILL'S GENERAL CATALOGUE

COMPRISING

ALL RECENT WORKS PUBLISHED BY THEM

ON THE

ART AND SCIENCE OF MEDICINE



N.B.—As far as possible, this List is arranged in the order in which medical study is usually pursued.

A SELECTION

FROM

J. & A. CHURCHILL'S GENERAL CATALOGUE,

COMPRISING

ALL RECENT WORKS PUBLISHED BY THEM ON THE
ART AND SCIENCE OF MEDICINE.

N.B.—*J. & A. Churchill's Descriptive List of Works on Chemistry, Materia Medica, Pharmacy, Botany, Photography, Zoology, the Microscope, and other Branches of Science, can be had on application.*

Practical Anatomy:

A Manual of Dissections. By CHRISTOPHER HEATH, Surgeon to University College Hospital. Fifth Edition. Crown 8vo, with 24 Coloured Plates and 269 Engravings, 15s.

Wilson's Anatomist's Vade-Mecum. Tenth Edition. By GEORGE BUCHANAN, Professor of Clinical Surgery in the University of Glasgow; and HENRY E. CLARK, M.R.C.S., Lecturer on Anatomy at the Glasgow Royal Infirmary School of Medicine. Crown 8vo, with 450 Engravings (including 26 Coloured Plates), 18s.

Braune's Atlas of Topographical Anatomy, after Plane Sections of Frozen Bodies. Translated by EDWARD BELLAMY, Surgeon to, and Lecturer on Anatomy, &c., at, Charing Cross Hospital. Large Imp. 8vo, with 34 Photolithographic Plates and 46 Woodcuts, 40s.

An Atlas of Human Anatomy.

By RICKMAN J. GODLEE, M.S., F.R.C.S., Assistant Surgeon and Senior Demonstrator of Anatomy, University College Hospital. With 48 Imp. 4to Plates (112 figures), and a volume of Explanatory Text, 8vo, £4 14s. 6d.

Surgical Anatomy:

A Series of Dissections, illustrating the Principal Regions of the Human Body. By JOSEPH MACLISE. Second Edition. 52 folio Plates and Text. Cloth, £3 12s.

Medical Anatomy.

By FRANCIS SIBSON, M.D., F.R.C.P., F.R.S. Imp. folio, with 21 Coloured Plates, cloth, 42s., half-morocco, 50s.

Anatomy of the Joints of Man.

By HENRY MORRIS, Surgeon to, and Lecturer on Anatomy and Practical Surgery at, the Middlesex Hospital. 8vo, with 44 Lithographic Plates (several being coloured) and 13 Wood Engravings, 16s.

Manual of the Dissection of the

Human Body. By LUTHER HOLDEN, Consulting Surgeon to St. Bartholomew's and the Foundling Hospitals, and JOHN LANGTON, F.R.C.S., Surgeon and Lecturer on Anatomy at St. Bartholomew's Hospital. Fourth Edition. 8vo, with 170 Engravings, 16s.

By the same Author.

Human Osteology:

Sixth Edition, edited by the Author and JAMES SHUTER, F.R.C.S., M.A., M.B., Assistant Surgeon to St. Bartholomew's Hospital. 8vo, with 61 Lithographic Plates and 89 Engravings. 16s.

Also.

Landmarks, Medical and Surgical. Third Edition. 8vo, 3s. 6d.

The Student's Guide to Surgical

Anatomy: An Introduction to Operative Surgery. By EDWARD BELLAMY, F.R.C.S. and Member of the Board of Examiners. Fcap. 8vo, with 76 Engravings, 7s.

The Student's Guide to Human

Osteology. By WILLIAM WARWICK WAGSTAFFE, Assistant Surgeon to St. Thomas's Hospital. Fcap. 8vo, with 23 Plates and 66 Engravings, 10s. 6d.

The Anatomical Remembrancer; or, Complete Pocket Anatomist. Eighth Edition. 32mo, 3s. 6d.

Diagrams of the Nerves of the Human Body, exhibiting their Origin, Divisions, and Connections, with their Distribution to the Various Regions of the Cutaneous Surface, and to all the Muscles. By WILLIAM H. FLOWER, F.R.C.S., F.R.S., Hunterian Professor of Comparative Anatomy to the Royal College of Surgeons. Third Edition, with 6 Plates. Royal 4to, 12s.

Atlas of Pathological Anatomy. By Dr. LANCEREUX. Translated by W. S. GREENFIELD, M.D., Professor of Pathology in the University of Edinburgh. Imp. 8vo, with 70 Coloured Plates, £5 5s.

A Manual of Pathological Anatomy. By C. HANDFIELD JONES, M.B., F.R.S.; and EDWARD H. SIEVEKING, M.D., F.R.C.P. Edited (with considerable enlargement) by J. F. PAYNE, M.D., F.R.C.P., Lecturer on General Pathology at St. Thomas's Hospital. Second Edition. Crown 8vo, with 195 Engravings, 16s.

Lectures on Pathological Anatomy. By SAMUEL WILKS, M.D., F.R.S., Physician to Guy's Hospital; and WALTER MOXON, M.D., Physician to Guy's Hospital. 2nd Ed. 8vo, Plates, 18s.

Post-Mortem Examinations:

A Description and Explanation of the Method of performing them, with especial reference to Medico-Legal Practice. By Prof. VIRCHOW. Translated by Dr. T. P. SMITH. Second Edition. Fcap. 8vo, with 4 Plates, 3s. 6d.

The Human Brain:

Histological and Coarse Methods of Research. A Manual for Students and Asylum Medical Officers. By W. BEVAN LEWIS, L.R.C.P. Lond., Deputy Medical Superintendent to the West Riding Lunatic Asylum. 8vo, with Wood Engravings and Photographs, 8s.

Principles of Human Physiology. By W. B. CARPENTER, C.B., M.D., F.R.S. Ninth Edition. By HENRY POWER, M.B., F.R.C.S. 8vo, with 3 Steel Plates and 377 Wood Engravings, 31s. 6d.

A Treatise on Human Physiology. By JOHN C. DALTON, M.D., Professor in the College of Physicians and Surgeons, New York. Seventh Edition. Med. 8vo, with 252 Engravings, 20s.

Text-Book of Physiology.

By J. FULTON, M.D., Professor of Physiology, &c., in Trinity Medical College, Toronto. Second Edition. 8vo, with 152 Engravings, 15s.

Sanderson's Handbook for the Physiological Laboratory. By E. KLEIN, M.D., F.R.S.; J. BURDON-SANDERSON, M.D., F.R.S.; MICHAEL FOSTER, M.D., F.R.S.; and T. LAUDER BRUNTON, M.D., F.R.S. 8vo, with 123 Plates, 24s.

Histology and Histo-Chemistry of Man. By HEINRICH FREY, Professor of Medicine in Zurich. Translated by ARTHUR E. J. BARKER, Assistant-Surgeon to University College Hospital. 8vo, with 608 Engravings, 21s.

The Marriage of Near Kin,

Considered with respect to the Laws of Nations, Results of Experience, and the Teachings of Biology. By ALFRED H. HUTH. 8vo, 14s.

Medical Jurisprudence:

Its Principles and Practice. By ALFRED S. TAYLOR, M.D., F.R.C.P., F.R.S. Second Edition. 2 vols. 8vo, with 189 Engravings, £1 11s. 6d.

By the same Author.

A Manual of Medical Jurisprudence. Tenth Edition. Crown 8vo, with 55 Engravings, 14s.

Also.

Poisons,

In Relation to Medical Jurisprudence and Medicine. Third Edition. Crown 8vo, with 104 Engravings, 16s.

Lectures on Medical Jurisprudence. By FRANCIS OGSTON, M.D., Professor in the University of Aberdeen. Edited by FRANCIS OGSTON, JUN., M.D. 8vo, with 12 Copper Plates, 18s.

A Handy - Book of Forensic Medicine and Toxicology. By C. MEYMOTT TIDY, M.D., F.C.S., and W. BATHURST WOODMAN, M.D., F.R.C.P. 8vo, with 8 Lithographic Plates and 116 Engravings, 31s. 6d.

Microscopical Examination of Drinking Water. By JOHN D. MACDONALD, M.D., F.R.S., Assistant Professor in the Army Medical School. 8vo, with 24 Plates, 7s. 6d.

Sanitary Examinations

Of Water, Air, and Food. A Vade-Mecum for the Medical Officer of Health. By CORNELIUS B. FOX, M.D., F.R.C.P. Crown 8vo, with 94 Engravings, 12s. 6d.

Sanitary Assurance:

A Lecture at the London Institution. By Prof. F. DE CHAUMONT, F.R.S. With Short Addresses by J. E. ERICHSEN, F.R.S., Sir J. FAYRER, K.C.S.I., and R. BRUDENELL CARTER, F.R.C.S., &c. Royal 8vo, 1s.

A Manual of Practical Hygiene.

By E. A. PARKES, M.D., F.R.S. Fifth Edition. By F. DE CHAUMONT, M.D., F.R.S., Professor of Military Hygiene in the Army Medical School. 8vo, with 9 Plates and 112 Engravings, 18s.

Dangers to Health:

A Pictorial Guide to Domestic Sanitary Defects. By T. PRIDGIN TEALE, M.A., Surgeon to the Leeds General Infirmary. Third Edition. 8vo, with 70 Lithograph Plates (mostly coloured). 10s.

A Handbook of Hygiene and Sanitary Science.

By GEO. WILSON, M.A., M.D., Medical Officer of Health for Mid-Warwickshire. Fourth Edition. Post 8vo, with Engravings, 10s. 6d.

Also.

Healthy Life and Healthy

Dwellings: A Guide to Personal and Domestic Hygiene. Fcap. 8vo, 5s.

Contributions to Military and

State Medicine. By JOHN MARTIN, L.R.C.S.E., Surgeon Army Medical Department. 8vo, 10s. 6d.

Pay Hospitals and Paying

Wards throughout the World. By HENRY C. BURDETT, late Secretary to the Seamen's Hospital Society. 8vo, 7s.

By the same Author.

Cottage Hospitals — General,

Fever, and Convalescent: Their Progress, Management, and Work. Second Edition, with many Plans and Illustrations. Crown 8vo, 14s.

Dress: Its Sanitary Aspect.

A Paper read before the Brighton Social Union, Jan. 30, 1880. By BERNARD ROTH, F.R.C.S. 8vo, with 8 Plates, 2s.

Manual of Anthropometry:

A Guide to the Measurement of the Human Body, containing an Anthropometrical Chart and Register, a Systematic Table of Measurements, &c. By CHARLES ROBERTS, F.R.C.S. 8vo, with numerous Illustrations and Tables, 6s. 6d.

Madness:

In its Medical, Legal, and Social Aspects. Lectures by EDGAR SHEPPARD, M.D., M.R.C.P., Professor of Psychological Medicine in King's College. 8vo, 6s. 6d.

Idiocy and Imbecility.

By WILLIAM W. IRELAND, M.D., Medical Superintendent of the Scottish National Institution for the Education of Imbecile Children at Larbert, Stirlingshire. 8vo, with Engravings, 14s.

A Manual of Psychological

Medicine: With an Appendix of Cases. By JOHN C. BUCKNILL, M.D., F.R.S., and D. HACK TUKE, M.D., F.R.C.P. Fourth Edition. 8vo, with 12 Plates (30 Figures) and Engravings, 25s.

The Student's Guide to the

Practice of Midwifery. By D. LLOYD ROBERTS, M.D., F.R.C.P., Physician to St. Mary's Hospital, Manchester. Second Edition. Fcap. 8vo, with 111 Engravings, 7s.

Handbook of Midwifery for Mid-

wives: from the Official Handbook for Prussian Midwives. By J. E. BURTON, L.R.C.P. Lond., Senior Assistant Medical Officer, Ladies' Charity, &c., Liverpool. With Engravings. Fcap. 8vo, 6s.

Lectures on Obstetric Opera-

tions: Including the Treatment of Hæmorrhage, and forming a Guide to the Management of Difficult Labour. By ROBERT BARNES, M.D., F.R.C.P., Obstetric Physician to St. George's Hospital. Third Edition. 8vo, with 124 Engravings, 18s.

By the same Author.

A Clinical History of Medical

and Surgical Diseases of Women. Second Edition. 8vo, with 181 Engravings, 28s.

West on the Diseases of

Women. Fourth Edition, revised and in part re-written by the Author, with numerous Additions by J. MATTHEWS DUNCAN, M.D., F.R.C.P., Obstetric Physician to St. Bartholomew's Hospital. 8vo, 16s.

Observations on the Cæsarean

Section, Craniotomy, and on other Obstetric Operations, with Cases. By THOMAS RADFORD, M.D., late Honorary Consulting Physician, St. Mary's Hospital, Manchester. Second Edition, with Plates. 8vo, 10s.

Clinical Lectures on Diseases

of Women: Delivered in St. Bartholomew's Hospital, by J. MATTHEWS DUNCAN, M.D., F.R.C.P., F.R.S.E. 8vo, 8s.

By the same Author.

Papers on the Female Perineum,

&c. 8vo, 6s.

The Principles and Practice of

Gynæcology. By THOMAS ADDIS EMMET, M.D., Surgeon to the Woman's Hospital, New York. Second Edition. Royal 8vo, with 133 Engravings, 24s.

The Student's Guide to the Diseases of Women. By ALFRED L. GALABIN, M.D., F.R.C.P., Assistant Obstetric Physician to Guy's Hospital. Second Edition. Fcap. 8vo, with 70 Engravings, 7s. 6d.

Notes on the Diseases of Women. Specially designed for Students preparing for Examination. By J. J. REYNOLDS, M.R.C.S. Fcap. 8vo, 2s. 6d.

By the same Author.

Notes on Midwifery :

Specially designed to assist the Student in preparing for Examination. Fcap. 8vo, 4s.

Practical Gynæcology :

A Handbook of the Diseases of Women. By HEYWOOD SMITH, M.D. Oxon., Physician to the Hospital for Women and to the British Lying-in Hospital. Second Edition. Crown 8vo, with Engravings. *(In the Press.)*

By the same Author.

Dysmenorrhea, its Pathology and Treatment. Crown 8vo, with Engravings, 4s. 6d.

Obstetric Aphorisms :

For the Use of Students commencing Midwifery Practice. By JOSEPH G. SWAYNE, M.D. Seventh Edition. Fcap. 8vo, with Engravings, 3s. 6d.

Obstetric Medicine and Surgery : Their Principles and Practice. By F. H. RAMSBOTHAM, M.D., F.R.C.P. Fifth Edition. 8vo, with 120 Plates, 22s.

A Complete Handbook of Obstetric Surgery. Giving Short Rules of Practice in every Emergency. By CHARLES CLAY, late Senior Surgeon to St. Mary's Hospital, Manchester. Third Edition. Fcap. 8vo, with 91 Engravings, 6s. 6d.

Schroeder's Manual of Midwifery, including the Pathology of Pregnancy and the Puerperal State. Translated by CHARLES H. CARTER, B.A., M.D. 8vo, with Engravings, 12s. 6d.

Influence of Posture on Women in Gynecic and Obstetric Practice. By J. H. AVELING, M.D., Physician to the Chelsea Hospital for Women. 8vo, 6s.

A Handbook of Uterine Therapeutics, and of Diseases of Women. By E. J. TILT, M.D., M.R.C.P. Fourth Edition. Post 8vo, 10s.

By the same Author.

The Change of Life

In Health and Disease : a Clinical Treatise on the Diseases of the Ganglionic Nervous System incidental to Women at the Decline of Life. Fourth Edition. 8vo, 10s. 6d.

Ovarian and Uterine Tumours :

Their Pathology and Surgical Treatment. By T. SPENCER WELLS, F.R.C.S., Consulting Surgeon to the Samaritan Hospital. 8vo, with Engravings, 21s.

Rupture of the Female Peritoneum : Its Treatment, immediate and remote. By GEORGE G. BANTOCK, M.D., Surgeon to the Samaritan Hospital. 8vo, with 2 Plates, 3s. 6d.

Chronic Disease of the Heart :

Its Bearings upon Pregnancy, Parturition, and Childbed. By ANGUS MACDONALD, M.D., F.R.S.E., Physician to the Edinburgh Royal Infirmary. 8vo, with Engravings, 8s. 6d.

The Female Pelvic Organs,

Their Surgery, Surgical Pathology, and Surgical Anatomy, in a Series of Coloured Plates taken from Nature : with Commentaries, Notes, and Cases. By HENRY SAVAGE, M.D., F.R.C.S., Consulting Officer of the Samaritan Free Hospital. Fifth Edition. Roy. 4to, with 17 Lithographic Plates (15 coloured) and 52 Woodcuts, £1 15s.

Lectures on Diseases of the

Nervous System, especially in Women. By S. WEIR MITCHELL, M.D., Physician to the Philadelphia Infirmary for Diseases of the Nervous System. With 5 Plates. Post 8vo, 8s.

A Treatise on the Diseases of Children. For Practitioners and Students. By W. H. DAY, M.D., Physician to the Samaritan Hospital for Women and Children. Crown 8vo, 12s. 6d.

The Wasting Diseases of Children. By EUSTACE SMITH, M.D., Physician to the King of the Belgians, Physician to the East London Hospital for Children. Third Edition. Post 8vo, 8s. 6d.

By the same Author.

Clinical Studies of Disease in Children. Second Edition. Post 8vo. *(In the Press.)*

Infant Feeding and its Influence on Life ; or, the Causes and Prevention of Infant Mortality. By C. H. F. ROUTH, M.D., Senior Physician to the Samaritan Hospital. Third Edition. Fcap. 8vo, 7s. 6d.

A Practical Manual of the Diseases of Children. With a Formulary. By EDWARD ELLIS, M.D. Fourth Edition. Crown 8vo, 10s.

By the same Author.

A Manual of what every Mother should know. Fcap. 8vo, 1s. 6d.

Handbook for Nurses for the Sick. By ZEPHERINA P. VEITCH. Second Edition. Crown 8vo, 3s. 6d.

A Manual for Hospital Nurses

and others engaged in Attending on the Sick. By EDWARD J. DOMVILLE, Surgeon to the Exeter Lying-in Charity. Fourth Edition. Crown 8vo, 2s. 6d.

Notes on Fever Nursing.

By J. W. ALLAN, M.B., Superintendent and Physician, Glasgow Fever Hospital. Crown 8vo, with Engravings, 2s. 6d.

Manual of Botany :

Including the Structure, Functions, Classification, Properties, and Uses of Plants. By ROBERT BENTLEY, Professor of Botany in King's College and to the Pharmaceutical Society. Fourth Edition. Crown 8vo, with 1,185 Engravings, 15s.

Medicinal Plants :

Being descriptions, with original figures, of the Principal Plants employed in Medicine, and an account of their Properties and Uses. By Prof. BENTLEY and Dr. H. TRIMEN. In 4 vols., large 8vo, with 306 Coloured Plates, bound in Half Morocco, Gilt Edges. £11 11s.

Royle's Manual of Materia

Medica and Therapeutics. Sixth Edition, by JOHN HARLEY, M.D., Physician to St. Thomas's Hospital. Crown 8vo, with 139 Engravings, 15s.

A Manual of Practical Therapeutics.

By E. J. WARING, C.B., M.D., F.R.C.P. Lond. Third Edition. Fcap. 8vo, 12s. 6d.

The Student's Guide to Materia

Medica and Therapeutics. By JOHN C. THOROWGOOD, M.D., F.R.C.P. Second Edition. Fcap. 8vo, 7s.

Materia Medica and Therapeutics.

By CHARLES D. F. PHILLIPS, M.D., late Lecturer on Materia Medica and Therapeutics at the Westminster Hospital Medical School.

Vol. 1—Vegetable Kingdom. 8vo, 15s.
Vol. 2—Inorganic Substances. 8vo, 21s.

Binz's Elements of Thera-

peutics : A Clinical Guide to the Action of Drugs. Translated by E. I. SPARKS, M.B., F.R.C.P. Crown 8vo, 8s. 6d.

Bazaar Medicines of India,

And Common Medical Plants : With Full Index of Diseases, indicating their Treatment by these and other Agents procurable throughout India, &c. By E. J. WARING, C.B., M.D., F.R.C.P. Third Edition. Fcap. 8vo, 5s.

Indian Notes.

The Voyage out ; Travelling in India ; Upper India ; Stations ; The Hills ; Mineral Waters ; Herbs and Simples. By F. R. HOGG, M.D., Surgeon-Major. Crown 8vo, 5s.

Endemic Diseases of Tropical

Climates, with their Treatment. By JOHN SULLIVAN, M.D. Post 8vo, 6s.

The National Dispensatory :

Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines, including those recognized in the Pharmacopœias of the United States and Great Britain and Germany, with numerous references to the French Codex. By ALFRED STILLÉ, M.D., LL.D., and JOHN M. MAISCH, Ph.D. Second Edition. 8vo, with 239 Engravings, 34s.

The Pharmacopœia of the London Hospital.

Compiled under the direction of a Committee appointed by the Hospital Medical Council. Fcp. 8vo, 3s.

A Companion to the British

Pharmacopœia. By PETER SQUIRE, F.L.S., assisted by his sons, P. W. and A. H. SQUIRE. Thirteenth Edition. 8vo, 10s. 6d.

By the same Authors.

The Pharmacopœias of the London

Hospitals, arranged in Groups for Easy Reference and Comparison. Fourth Edition. 18mo, 6s.

A New System of Medicine ;

Entitled Recognisant Medicine, or the State of the Sick. By B. BOSE, M.D., Indian Medical Service. 8vo, 10s. 6d.

By the same Author.

Principles of Rational Thera-

peutics. Commenced as an Inquiry into the Relative Value of Quinine and Arsenic in Ague. Crown 8vo, 4s. 6d.

Diseases of Tropical Climates,

And their Treatment : with Hints for the Preservation of Health in the Tropics. By JAMES A. HORTON, M.D., Surgeon-Major. Second Edition. Post 8vo, 12s. 6d.

Tropical Dysentery and Chronic

Diarrhœa—Liver Abscess—Malarial Cachexia—Insolation—with other forms of Tropical Diseases, &c. By Sir JOSEPH FAYRER, K.C.S.I., M.D., 8vo, 15s.

By the same Author.

Clinical and Pathological Obser-

vations in India. 8vo, with Engravings, 20s.

Spirillum Fever :

(Synonyms, Famine or Relapsing Fever), as seen in Western India. By H. VANDYKE CARTER, M.D., Surgeon-Major I.M.D. 8vo, with Plates, 21s.

Family Medicine for India.

By WILLIAM J. MOORE, M.D., Honorary Surgeon to the Viceroy of India. Published under the Authority of the Government of India. Fourth Edition. Post 8vo, with Engravings. (*In the Press.*)

By the same Author.

Health Resorts for Tropical

Invalids, in India, at Home, and Abroad. Post 8vo, 5s.

The Elements of Indian Hygiene.

Intended to guide the Public in acquiring some knowledge in the all-important subject of the Preservation of Health and Prevention of Sickness. By JOHN C. LUCAS, F.R.C.S., H.M.'s Indian Medical Service. Crown 8vo, with Map of India, &c., 5s.

The Student's Guide to the

Practice of Medicine. By MATTHEW CHARTERIS, M.D., Professor of Materia Medica in the University of Glasgow. Third Edition. Fcap. 8vo, with Engravings on Copper and Wood, 7s.

Hooper's Physicians' Vade-

Mecum. A Manual of the Principles and Practice of Physic. Tenth Edition. By W. A. GUY, F.R.C.P., F.R.S., and J. HARLEY, M.D., F.R.C.P. With 118 Engravings. Fcap. 8vo, 12s. 6d.

Clinical Studies:

Illustrated by Cases observed in Hospital and Private Practice. By Sir J. ROSE CORMACK, M.D., F.R.S.E., late Physician to the Hertford British Hospital of Paris. Two vols. Post 8vo, 20s.

Clinical Medicine:

Lectures and Essays. By BALTHAZAR FOSTER, M.D., F.R.C.P. Lond., Professor of Medicine in Queen's College, Birmingham. 8vo, 10s. 6d.

Clinical Lectures and Cases,

with Commentaries. By HENRY THOMPSON, M.D., F.R.C.P., Consulting Physician to Middlesex Hospital. With Temperature Charts. 8vo, 7s. 6d.

Clinical Medicine:

A Systematic Treatise on the Diagnosis and Treatment of Disease. By AUSTIN FLINT, M.D., Professor of Medicine in the Bellevue Hospital Medical College. 8vo, 20s.

By the same Author.

Phthisis:

In a series of Clinical Studies. 8vo, 16s.

Transfusion of Human Blood:

With Table of 50 cases. By Dr. ROUSSEL, of Geneva. With a Preface by Sir JAMES PAGET, Bart. Crown 8vo, 2s. 6d.

The Spectroscope in Medicine.

By CHARLES A. MACMUNN, B.A., M.D. 8vo, with 3 Chromo-lithographic Plates of Physiological and Pathological Spectra, and 13 Engravings, 9s.

The Microscope in Medicine.

By LIONEL S. BEALE, M.B., F.R.S., Physician to King's College Hospital. Fourth Edition. 8vo, with 86 Plates, 21s.

Also.

On Slight Ailments:

Their Nature and Treatment. 8vo, 5s.

A Manual of Medical Diagnosis.

By A. W. BARCLAY, M.D., F.R.C.P., Physician to St. George's Hospital. Third Edition. Fcap. 8vo, 10s. 6d.

The Student's Guide to Medical

Diagnosis. By SAMUEL FENWICK, M.D., F.R.C.P., Physician to the London Hospital. Fifth Edition. Fcap. 8vo, with 111 Engravings, 7s.

By the same Author.

The Student's Outlines of Medical Treatment.

Second Edition. Fcap. 8vo, 7s.

Also.

On Chronic Atrophy of the

Stomach, and on the Nervous Affections of the Digestive Organs. 8vo, 8s.

The Student's Guide to Medical

Case-Taking. By FRANCIS WARNER, M.D., Assistant Physician to the London Hospital. Fcap. 8vo, 5s.

Notes on Asthma:

Its Forms and Treatment. By JOHN C. THOROWGOOD, M.D., Physician to the Hospital for Diseases of the Chest, Victoria Park. Third Edition. Crown 8vo, 4s. 6d.

Observations on the Result of

Treatment of nearly One Hundred Cases of Asthma. By T. L. PRIDHAM, M.R.C.S. Third Edition. 8vo, 2s. 6d.

Diseases of the Chest:

Contributions to their Clinical History, Pathology, and Treatment. By A. T. HOUGHTON WATERS, M.D., Physician to the Liverpool Royal Infirmary. Second Edition. 8vo, with Plates, 15s.

Winter Cough:

(Catarrh, Bronchitis, Emphysema, Asthma). By HORACE DOBELL, M.D., Consulting Physician to the Royal Hospital for Diseases of the Chest. Third Edition. 8vo, with Coloured Plates, 10s. 6d.

By the same Author.

Loss of Weight, Blood-Spitting, and Lung Disease.

Second Edition, to which is added Part VI., "On the Functions and Diseases of the Liver." 8vo, with Chromo-lithograph, 10s. 6d.

Also.

The Mont Dore Cure, and the Proper Way to Use it.

8vo, 7s. 6d.

Relapse of Typhoid Fever, especially with reference to the

Temperature. By J. PEARSON IRVINE, M.D., F.R.C.P., late Assistant Physician to Charing Cross Hospital. 8vo, with Engravings, 6s.

Croonian Lectures on Some Points in the Pathology and Treatment of Typhoid Fever. By WILLIAM CAYLEY, M.D., F.R.C.P., Physician to the Middlesex and the London Fever Hospitals. Crown 8vo, 4s. 6d.

Diseases of the Heart and Aorta: Clinical Lectures. By GEORGE W. BALFOUR, M.D., F.R.C.P., and F.R.S. Edin., Senior Physician to, and Lecturer on Clinical Medicine in, the Royal Infirmary, Edinburgh. Second Edition. 8vo, with Chromo-Lithograph and Wood Engravings, 12s. 6d.

On Diseases of the Heart.

By THOS. B. PEACOCK, M.D., F.R.C.P. (1) Malformations. 8vo, 10s. (2) Causes and Effects of Valvular Disease. 8vo, 5s. (3) Prognosis in Valvular Disease. 8vo, 3s. 6d.

Manual of the Physical Diagnosis of Diseases of the Heart, including the use of the Sphygmograph and Cardiograph. By ARTHUR E. SANSOM, M.D., F.R.C.P., Assistant-Physician to the London Hospital. Third Edition. Fcap. 8vo, with 48 Engravings, 7s. 6d.

By the same Author.

The Antiseptic System in Medicine and Surgery: A Treatise on Carbolic Acid and its Compounds, etc. With 9 Plates (42 Figures), 8vo, 10s. 6d.

Medical Ophthalmoscopy:

A Manual and Atlas. By WILLIAM R. GOWERS, M.D., F.R.C.P., Assistant Professor of Clinical Medicine in University College, and Senior Assistant-Physician to the Hospital. Second Edition, with Coloured Autotype and Lithographic Plates and Woodcuts. 8vo, 18s.

By the same Author.

Epilepsy, and other Chronic Convulsive Diseases: Their Causes, Symptoms, and Treatment. 8vo, 10s. 6d.

Also.

Pseudo-Hypertrophic Muscular Paralysis: A Clinical Lecture. 8vo, with Engravings and Plate, 3s. 6d.

Also.

The Diagnosis of Diseases of the Spinal Cord. Second Edition. 8vo, with Coloured Plate and Engravings, 4s. 6d.

The Sympathetic System of Nerves: Their Physiology and Pathology. By Professor EULENBURG and Dr. P. GUTTMANN. Translated by A. NAPIER, M.D., F.F.P.S. 8vo, 5s. 6d.

Studies on Functional Nervous Disorders. By C. HANDFIELD JONES, M.B., F.R.S., Physician to St. Mary's Hospital. Second Edition. 8vo, 18s.

Diseases of the Stomach:

The Varieties of Dyspepsia, their Diagnosis and Treatment. By S. O. HABERSHON, M.D., F.R.C.P., late Senior Physician to Guy's Hospital. Third Edition. Crown 8vo, 5s.

By the same Author.

Pathology of the Pneumogastric Nerve, being the Lumleian Lectures for 1876. Post 8vo, 3s. 6d.

Also.

Diseases of the Abdomen,

Comprising those of the Stomach and other parts of the Alimentary Canal, Œsophagus, Cæcum, Intestines, and Peritoneum. Third Edition. 8vo, with 5 Plates, 21s.

Gout, Rheumatism,

And the Allied Affections; with a Chapter on Longevity and the Causes Antagonistic to it. By PETER HOOD, M.D. Second Edition. Crown 8vo, 10s. 6d.

Notes on Rheumatism.

By JULIUS POLLOCK, M.D., F.R.C.P., Senior Physician to the Charing Cross Hospital. Second Edition. Fcap. 8vo, with Engravings, 3s. 6d.

Diseases of the Nervous System:

Clinical Lectures. By THOMAS BUZZARD, M.D., F.R.C.P., Physician to the National Hospital for the Paralysed and Epileptic. With Engravings, 8vo, 15s.

A Treatise on the Diseases of the Nervous System. By JAMES ROSS, M.D., F.R.C.P., Assistant-Physician to the Manchester Royal Infirmary. Two vols., 8vo, with Lithographs, Photographs, and 280 Wood Engravings, 42s.

Lectures on Diseases of the Nervous System. By SAMUEL WILKS, M.D., F.R.S., Physician to Guy's Hospital. Second Edition. 8vo.

(In the Press.)

Nervous Diseases:

Their Description and Treatment. A Manual for Students and Practitioners of Medicine. By ALLEN McLANE HAMILTON, M.D., Physician at the Epileptic and Paralytic Hospital, Blackwell's Island, New York. Second Edition. Royal 8vo, with 72 Engravings, 16s.

Headaches:

Their Nature, Causes, and Treatment. By WILLIAM H. DAY, M.D., Physician to the Samaritan Hospital for Women and Children. Third Edition. Crown 8vo, with Engravings, 6s. 6d.

Fits:

Diagnosis and Immediate Treatment of Cases of Insensibility and Convulsions. By JOHN H. WATERS, M.D., K.C., St.G.C., Surgeon to the C Division of Metropolitan Police. Crown 8vo, bound in leather, 4s.

On Megrim, Sick Headache and some Allied Disorders: a Contribution to the Pathology of Nerve Storms. By E. LIVEING, M.D., F.R.C.P. 8vo, 15s.

Nutrition in Health and Disease: A Contribution to Hygiene and to Clinical Medicine. By HENRY BENNET, M.D. Third (Library) Edition. 8vo, 7s. Cheap Edition. Fcap. 8vo, 2s. 6d.

Food and Dietetics, Physiologically and Therapeutically Considered. By F. W. PAVY, M.D., F.R.S., Physician to Guy's Hospital. Second Edition. 8vo, 15s.

By the same Author.

Croonian Lectures on Certain Points connected with Diabetes. 8vo, 4s. 6d.

Imperfect Digestion: Its Causes and Treatment. By A. LEARED, M.D., Seventh Edition. Fcap. 8vo, 4s. 6d.

Indigestion: What it is; what it leads to; and a New Method of Treating it. By JOHN B. GILL, M.D., formerly Surgeon to the Dover Hospital, &c. Second Edition. Fcap. 8vo, 4s. 6d.

The Climate of the Undercliff, Isle of Wight, as deduced from forty years' consecutive Meteorological Observations. By J. L. WHITEHEAD, M.D. Royal 8vo, 5s.

The Riviera: Sketches of the Health-Resorts of the North Mediterranean Coast of France and Italy, from Hyères to Spezia; with Chapters on the General Meteorology of the District, its Medical Aspect and Value, &c. By EDWARD I. SPARKS, M.B., F.R.C.P. Crown 8vo, 8s. 6d.

Winter and Spring On the Shores of the Mediterranean. By HENRY BENNET, M.D. Fifth Edition. Post 8vo, with numerous Plates, Maps, and Engravings, 12s. 6d.

By the same Author.

Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine. Third Edition. 8vo, 7s. 6d.

The Ocean as a Health-Resort: A Practical Handbook of the Sea, for the use of Tourists and Health-Seekers. By WILLIAM S. WILSON, L.R.C.P., Second Edition, with Chart of Ocean Routes, &c. Crown 8vo, 7s. 6d.

Davos Platz, and the Effects of High Altitude on Phthisis. By ALFRED WISE, M.D. Fcap. 8vo, 2s. 6d.

Principal Health-Resorts Of Europe and Africa, and their Use in the Treatment of Chronic Diseases. By THOMAS MORE MADDEN, M.D., M.R.I.A. 8vo, 10s.

Handbook of Medical and Surgical Electricity. By HERBERT TIBBITS, M.D., F.R.C.P.E., Senior Physician to the West London Hospital for Paralysis and Epilepsy. Second Edition. 8vo, with 95 Engravings, 9s.

By the same Author.

A Map of Ziemssen's Motor Points of the Human Body: A Guide to Localised Electrisation. Mounted on Rollers, 35 x 21. With 20 Illustrations, 5s.

Lectures on the Clinical Uses of Electricity. By J. RUSSELL REYNOLDS, M.D., F.R.S., Physician to University College Hospital. Second Edition. Post 8vo, 3s. 6d.

A System of Practical Surgery. By Sir WILLIAM FERGUSSON, Bart., F.R.S. Fifth Edition. 8vo, with 463 Engravings, 21s.

Surgical Emergencies: Together with the Emergencies Attendant on Parturition and the Treatment of Poisoning. By PAUL SWAIN, F.R.C.S., Surgeon to the Royal Albert Hospital, Devonport. Third Edition. Crown 8vo, with 117 Engravings, 5s.

A Course of Operative Surgery. By CHRISTOPHER HEATH, Surgeon to University College Hospital. With 20 Plates drawn from Nature by M. LÉVEILLÉ, and coloured by hand under his direction. Large 8vo, 40s.

By the same Author.

The Student's Guide to Surgical Diagnosis. Fcap. 8vo, 6s. 6d.

Also.

Manual of Minor Surgery and Bandaging. For the use of House Surgeons, Dressers, and Junior Practitioners. Sixth Edition. Fcap. 8vo, with 115 Engravings, 5s. 6d.

Also.

Injuries and Diseases of the Jaws. Second Edition. 8vo, with 164 Engravings, 12s.

Outlines of Surgery and Surgical Pathology. By F. LE GROS CLARK, F.R.S., assisted by W. W. WAGSTAFFE, F.R.C.S. Second Edition. 8vo, 10s. 6d.

The Practice of Surgery :

A Manual. By THOMAS BRYANT, Surgeon to Guy's Hospital. Third Edition. Two vols. Crown 8vo, with 672 Engravings (many being coloured), 28s.

The Surgeon's Vade-Mecum :

A Manual of Modern Surgery. By ROBERT DRUITT, F.R.C.S. Eleventh Edition. Fcap. 8vo, with 369 Engravings, 14s.

Illustrations of Clinical Surgery.

By JONATHAN HUTCHINSON, Senior Surgeon to the London Hospital. In occasional fasciculi. I. to XIV., 6s. 6d. each. Fasciculi I. to X. bound, with Appendix and Index, £3 10s.

The Principles and Practice

of Surgery. By WILLIAM PIRRIE, F.R.S.E., Professor of Surgery in the University of Aberdeen. Third Edition. 8vo, with 490 Engravings, 28s.

Surgical Enquiries :

Including the Hastings Essay on Shock, the Treatment of Inflammations, and numerous Clinical Lectures. By FURNEAUX JORDAN, F.R.C.S., Professor of Surgery, Queen's College, Birmingham. Second Edition, with numerous Plates. Royal 8vo, 12s. 6d.

Treatment of Wounds :

Clinical Lectures. By SAMPSON GAMGEE, F.R.S.E., Surgeon to the Queen's Hospital, Birmingham. Crown 8vo, with Engravings, 5s.

By the same Author.

Fractures of the Limbs,

And their Treatment. 8vo, with Plates, 10s. 6d.

On Dislocations and Fractures.

By JOSEPH MACLISE, F.R.C.S. Uniform with "Surgical Anatomy." 36 folio Plates and Text. Cloth, £2 10s.

Lectures on Diseases of Bones

and Joints. By CHARLES MACNAMARA, F.R.C.S., Surgeon to, and Lecturer on Surgery at, Westminster Hospital. Crown 8vo, with Engravings, 10s. 6d.

Clubfoot :

Its Causes, Pathology, and Treatment. By WM. ADAMS, F.R.C.S., Surgeon to the Great Northern Hospital. Second Edition. 8vo, with 106 Engravings and 6 Lithographic Plates, 15s.

By the same Author.

On Contraction of the Fingers,

and its Treatment by Subcutaneous Operation; and on Obliteration of Depressed Cicatrices, by the same Method. 8vo, with 30 Engravings, 4s. 6d.

Also.

Lateral and other Forms of

Curvature of the Spine: Their Pathology and Treatment. Second Edition. 8vo, with 5 Lithograph Plates and 72 Wood Engravings, 10s. 6d.

Osteotomy :

With an Enquiry into the Etiology and Pathology of Knock-knee, Bow-leg, and other Osseous Deformities of the Lower Limbs. By WILLIAM MACEWEN, M.D., Surgeon and Lecturer on Clinical Surgery to the Glasgow Royal Infirmary. 8vo, with 51 Engravings, 7s. 6d.

Lectures on Orthopædic Sur-

gery. By BERNARD E. BRODHURST, F.R.C.S., Surgeon to the Royal Orthopædic Hospital. Second Edition. 8vo, with Engravings, 12s. 6d.

By the same Author.

On Anchylosis, and the Treat-

ment for the Removal of Deformity and the Restoration of Mobility in Various Joints. Fourth Edition. 8vo, with Engravings, 5s.

Orthopædic Surgery,

And Diseases of the Joints. By L. A. SAYRE, M.D., Professor of Orthopædic Surgery in Bellevue Hospital Medical College. 8vo, with 274 Engravings, 20s.

Orthopraxy :

The Mechanical Treatment of Deformities, Debilities, and Deficiencies of the Human Frame. By H. HEATHER BIGG, Assoc. Inst. C.E. Third Edition. 8vo, with 319 Engravings, 15s.

The Orthopragms of the Spine :

An Essay on the Curative Mechanisms applicable to Spinal Curvature, etc. By ROBERT HEATHER BIGG, Assoc. Inst. C.E. 8vo, with Engravings, 5s.

A Manual of the Principles and

Practice of Ophthalmic Medicine and Surgery. By T. WHARTON JONES, F.R.C.S., F.R.S. Third Edition. Fcap. 8vo, with 9 Coloured Plates and 173 Engravings, 12s. 6d.

On Diseases and Injuries of the

Eye: A Course of Systematic and Clinical Lectures to Students and Medical Practitioners. By J. R. WOLFE, M.D., F.R.C.S.E., Senior Surgeon to the Glasgow Ophthalmic Institution; Lecturer on Ophthalmic Medicine and Surgery in Anderson's College. With 10 Coloured Plates and 157 Wood Engravings. 8vo, £1 1s.

Hints on Ophthalmic Out-Patient

Practice. By CHARLES HIGGENS, Ophthalmic Assistant-Surgeon to, and Lecturer on Ophthalmology at, Guy's Hospital. Second Edition. Fcap. 8vo, 3s.

Liebreich's Atlas of Ophthal-

moscopy: Composed of 12 Chromolithographic Plates (containing 59 Figures). The Text translated by H. ROSBOROUGH SWANZY, M.B. Second Edition. 4to, 30s.

The Student's Guide to Diseases of the Eye. By EDWARD NETTLESHIP, F.R.C.S., Ophthalmic Surgeon to St. Thomas's Hospital and to the Hospital for Sick Children. Second Edition. Fcap. 8vo, with 137 Engravings, 7s. 6d.

A Manual of Diseases of the Eye. By C. MACNAMARA, F.R.C.S., Surgeon to Westminster Hospital. Third Edition. Fcap. 8vo, with Coloured Plates and Engravings, 12s. 6d.

Glaucoma :

Its Causes, Symptoms, Pathology, and Treatment. By PRIESTLEY SMITH, M.R.C.S., Ophthalmic Surgeon to the Queen's Hospital, Birmingham. 8vo, with Lithographic Plates, 10s. 6d.

A Manual of Ophthalmoscopy for the use of Students. By DR. DAGUENET. Translated by C. S. JEAFFRESON, Surgeon to the Newcastle-on-Tyne Eye Infirmary. With Engravings. Fcap. 8vo, 5s.

Essays in Ophthalmology.

By GEORGE E. WALKER, F.R.C.S., Surgeon to St. Paul's Eye and Ear Hospital, &c., Liverpool. Post 8vo, 6s.

Hare-Lip and Cleft Palate.

By FRANCIS MASON, F.R.C.S., Surgeon to, and Lecturer on Practical Surgery at, St. Thomas's Hospital. 8vo, with 66 Engravings, 6s.

By the same Author.

The Surgery of the Face.

8vo, with 100 Engravings, 7s. 6d.

A Practical Treatise on Aural Surgery. By H. MACNAUGHTON JONES, M.D., Professor of the Queen's University in Ireland, Surgeon to the Cork Ophthalmic and Aural Hospital. Second Edition. Crown 8vo, with 63 Engravings, 8s. 6d.

By the same Author.

Atlas of Diseases of the Membrana Tympani. In Coloured Plates, containing 62 Figures, with Text. Crown 4to, 21s.

Diseases and Injuries of the Ear. By WILLIAM B. DALBY, F.R.C.S., Aural Surgeon to, and Lecturer on Surgery at, St. George's Hospital. Second Edition. Fcap. 8vo, with Engravings, 6s. 6d.

Lectures on Syphilis of the Larynx (Lesions of the Secondary and Intermediate Stages). By W. MACNEILL WHISTLER, M.D., Physician to the Hospital for Diseases of the Throat and Chest. Post 8vo, 4s.

Diseases of the Throat and Nose. A Manual. By MORELL MACKENZIE, M.D. Lond., Senior Physician to the Hospital for Diseases of the Throat and Chest. Vol. I. Diseases of the Pharynx, Larynx, and Trachea. Post 8vo, with 112 Engravings, 12s. 6d.

By the same Author.

Diphtheria :

Its Nature and Treatment, Varieties, and Local Expressions. 8vo, 5s.

Throat Diseases,

And the Use of the Laryngoscope: A Handbook for Practitioners and Senior Students. By W. D. HEMMING, F.R.C.S.E. With Engravings. Fcap. 8vo, 2s. 6d.

The Ear :

Its Anatomy, Physiology, and Diseases. By C. H. BURNETT, A.M., M.D., Aural Surgeon to the Presbyterian Hospital, Philadelphia. 8vo, with 87 Engravings, 18s.

A Treatise on Vocal Physiology and Hygiene, with especial reference to the Cultivation and Preservation of the Voice. By GORDON HOLMES, L.R.C.P. Edin., Physician to the Municipal Throat and Ear Infirmary. Second Edition. With Engravings. Crown 8vo, 6s. 6d.

By the same Author.

A Guide to the Use of the Laryngoscope in General Practice. Crown 8vo, with 15 Engravings, 2s. 6d.

Ear and Throat Diseases.

Essays by LLEWELLYN THOMAS, M.D., Surgeon to the Central London Throat and Ear Hospital. Post 8vo, 2s. 6d.

Sore Throat :

Its Nature, Varieties, and Treatment. By PROSSER JAMES, M.D., Physician to the Hospital for Diseases of the Throat. Fourth Edition. Post 8vo, with Coloured Plates and Engravings, 6s. 6d.

A System of Dental Surgery.

By JOHN TOMES, F.R.S., and C. S. TOMES, M.A., F.R.S. Second Edition. Fcap. 8vo, with 268 Engravings, 14s.

Dental Anatomy, Human and Comparative: a Manual. By CHARLES S. TOMES, M.A., F.R.S. Second Edition. Crown 8vo, with 191 Engravings, 12s. 6d.

A Practical Treatise on Operative Dentistry. By JONATHAN TAFT, D.D.S., Professor in the Ohio College of Dental Surgery. Third Edition. With 134 Engravings. 8vo, 18s.

The Student's Guide to Dental Anatomy and Surgery. By HENRY SEWILL, M.R.C.S., L.D.S. Fcap. 8vo, with 77 Engravings, 5s. 6d.

A Manual of Dental Mechanics.

By OAKLEY COLES, L.D.S.R.C.S.,
Second Edition. Crown 8vo, with 140
Engravings, 7s. 6d.

By the same Author.

Deformities of the Mouth.

Third Edition, 8vo, with 83 Wood En-
gravings and 96 Drawings on Stone, 12s. 6d.

Mechanical Dentistry in Gold

and Vulcanite. By F. H. BALK-
WILL, L.D.S.R.C.S. 8vo, with 2 Litho-
graphic Plates and 57 Engravings, 10s.

Lectures on Dermatology:

Delivered at the Royal College of Sur-
geons, by Sir ERASMUS WILSON, F.R.S.
1870, 6s.; 1871-73, 10s. 6d.; 1874-75,
10s. 6d.; 1876-78, 10s. 6d.

Eczema:

By MCCALL ANDERSON, M.D., Professor
of Clinical Medicine in the University of
Glasgow. Third Edition. 8vo, with
Engravings, 7s. 6d.

Eczema and its Management:

A practical Treatise based on the Study
of 2,500 Cases of the Disease. By L.
DUNCAN BULKLEY, M.D., Physician for
Skin and Venereal Diseases at the New
York Hospital. 8vo, 12s. 6d.

By the same Author.

Diseases of the Skin:

A Manual, with an Analysis of 8,000 Con-
secutive Cases and a Formulary. Crown
8vo, 6s. 6d.

Psoriasis, or Lepra.

By GEORGE GASKOIN, M.R.C.S., Sur-
geon to the British Hospital for Diseases
of the Skin. 8vo, 5s.

On Certain Rare Diseases of the

Skin: being Vol. 1 of "Lectures on
Clinical Surgery." By JONATHAN
HUTCHINSON, Senior Surgeon to the
London Hospital, and to the Hospital
for Diseases of the Skin. 8vo, 10s. 6d.

Leprosy in British Guiana:

An Account of West Indian Leprosy. By
JOHN D. HILLIS, F.R.C.S., M.R.I.A.,
Medical Superintendent of the Leper
Asylum, British Guiana. Imp. 8vo, with
22 Lithographic Coloured Plates and
Wood Engravings. £1 11s. 6d.

Photographic Illustrations of

Skin Diseases. Sixty Cases from Life.
By GEORGE H. FOX, M.D. 4to, £5 5s.

Atlas of Skin Diseases:

By TILBURY FOX, M.D., F.R.C.P.
With 72 Coloured Plates. Royal 4to, half
morocco, £6 6s

Sarcoma and Carcinoma:

Their Pathology, Diagnosis, and Treat-
ment. By HENRY T. BUTLIN, F.R.C.S.,
Assistant-Surgeon to St. Bartholomew's
Hospital. 8vo, with 4 Plates, 8s.

Cancer of the Breast:

By THOMAS W. NUNN, F.R.C.S., Con-
sulting Surgeon to the Middlesex Hos-
pital. 4to, with 21 Coloured Plates, £2 2s.

Cancer Life:

Its Causes, Progress, and Treatment. A
General and Historical Treatise. By
R. MITCHELL, M.R.C.S. 8vo, 7s. 6d.

Certain Forms of Cancer,

With a New and Successful Mode of treat-
ing it. By A. MARSDEN, Senior Surgeon
to the Cancer Hospital. Second Edition.
8vo, with Coloured Plates, 8s. 6d.

On Cancer:

Its Allies, and other Tumours, with special
reference to their Medical and Surgical
Treatment. By F. A. PURCELL, M.D.,
M.C., Surgeon to the Cancer Hospital,
Brompton. 8vo, with 21 Engravings,
10s. 6d.

Diseases of the Urinary Organs:

Clinical Lectures. By Sir HENRY
THOMPSON, F.R.C.S., Emeritus Pro-
fessor of Clinical Surgery in University
College. Sixth (Students') Edition. 8vo,
with 73 Engravings, 2s. 6d.

By the same Author.

Diseases of the Prostate:

Their Pathology and Treatment. Fourth
Edition. 8vo, with numerous Plates, 10s.

Also.

Practical Lithotomy and Litho-

trity; or, an Inquiry into the best Modes
of Removing Stone from the Bladder.
Third Edition. 8vo, with 87 Engravings,
10s. *Also.*

The Preventive Treatment of

Calculus Disease, and the Use of
Solvent Remedies. Second Edition.
Fcap. 8vo, 2s. 6d.

Diseases of the Testis, Sperm-

atic Cord, and Scrotum. By
THOMAS B. CURLING, F.R.S., Consult-
ing Surgeon to the London Hospital.
Fourth Edition. 8vo, with Engravings, 16s.

Fistula, Hæmorrhoids, Painful

Ulcer, Stricture, Prolapsus, and
other Diseases of the Rectum:
Their Diagnosis and Treatment. By
WILLIAM ALLINGHAM, Surgeon to St.
Mark's Hospital for Fistula. Fourth
Edition. 8vo, with Engravings, 10s. 6d.

Hæmorrhoidal Disorder.

By JOHN GAY, F.R.C.S., Senior Sur-
geon to the Great Northern Hospital,
8vo, with Engravings, 2s. 6d.

Hydrocele:

Its several Varieties and their Treatment.
By SAMUEL OSBORN, late Surgical
Registrar to St. Thomas's Hospital.
Fcap. 8vo, with Engravings, 3s.

By the same Author.

Diseases of the Testis.

Fcap. 8vo, with Engravings, 3s. 6d.

Parasites :

A Treatise on the Entozoa of Man and Animals, including some Account of the Ecto-zoa. By T. SPENCER COBBOLD, M.D., F.R.S. 8vo, with 85 Engravings, 15s.

The Surgery of the Rectum.

By HENRY SMITH, Professor of Surgery in King's College, Surgeon to the Hospital. Fifth Edition. 8vo, 6s.

Cancer of the Rectum :

Its Pathology, Diagnosis, and Treatment. By W. HARRISON CRIPPS, F.R.C.S., Assist.-Surg. to St. Bartholomew's Hospital, &c. Cr. 8vo, with Lithographic Plates, 6s.

Lectures on the Surgical Disorders of the Urinary Organs.

By REGINALD HARRISON, F.R.C.S., Surgeon to the Liverpool Royal Infirmary. Second Edition, with 48 Engravings. 8vo, 12s. 6d.

By the same Author.

The Prevention of Stricture and

of Prostatic Obstruction. 8vo, with Engravings, 2s. 6d.

Lithotomy and Extraction of

Stone. By W. P. HARRIS, M.D., Surgeon-Major H.M. Bengal Medical Service. 8vo, with Engravings, 10s. 6d.

Diseases of the Bladder,

Prostate Gland, and Urethra, with a practical view of Urinary Diseases, Deposits, and Calculi. By F. J. GANT, Senior Surgeon to the Royal Free Hospital. Fourth Edition. Crown 8vo, 10s. 6d.

Morbid Conditions of the Urine,

dependent upon Derangements of Digestion. By CHARLES H. RALFE, M.D., F.R.C.P., Assistant-Physician to the London Hospital. Crown 8vo, 6s.

Renal and Urinary Diseases :

Clinical Reports. By WILLIAM CARTER, M.B., Physician to the Liverpool Southern Hospital. Crown 8vo, 7s. 6d.

Pathology of the Urine,

Including a Complete Guide to its Analysis. By J. L. W. THUDICHUM, M.D., F.R.C.P. Second Edition, rewritten and enlarged. 8vo, with Engravings, 15s.

Genito-Urinary Organs, including

Syphilis : a Practical Treatise on their Surgical Diseases, designed as a Manual for Students and Practitioners. By W. H. VAN BUREN, M.D., and E. L. KEYES, M.D. Royal 8vo, with 140 Engravings, 21s.

Lectures on Syphilis.

By HENRY LEE, Consulting Surgeon to St. George's Hospital. 8vo, 10s.

Harveian Lectures on Syphilis.

By JAMES R. LANE, F.R.C.S., Surgeon to St. Mary's Hospital. Second Edition. Fcap. 8vo, 3s. 6d.

Photographic Illustrations of

Cutaneous Syphilis. Seventy Cases from Life. By G. H. FOX, M.D. 4to, £5 5s.

Urinary and Reproductive Or-

gans : their Functional Diseases. By D. CAMPBELL BLACK, M.D. Second Edition. 8vo, 10s.

A Treatise on Syphilis.

By WALTER J. COULSON, Surgeon to the Lock Hospital and to St. Peter's Hospital for Stone. 8vo, 10s.

By the same Author.

Stone in the Bladder :

Its Prevention, early Symptoms, and Treatment by Lithotripsy. 8vo, 6s.

Also.

Coulson on Diseases of the Bladder and Prostate Gland.

Sixth Edition. 8vo, 16s.

The Reproductive Organs

In Childhood, Youth, Adult Age, and Advanced Life, considered in their Physiological, Social, and Moral Relations. By WILLIAM ACTON, M.R.C.S. Sixth Edition. 8vo, 12s.

Student's Primer on the Urine.

By J. TRAVIS WHITTAKER, M.D., Clinical Demonstrator at the Royal Infirmary, Glasgow. With 16 Plates etched on Copper. Post 8vo, 4s. 6d.

A Manual of the Laws affecting

Medical Men. By ROBERT G. GLENN, LL.B., Barrister-at-Law. 8vo, 14s.

The Medical Adviser in Life

Assurance. By EDWARD H. SIEVEKING, M.D., F.R.C.P., Physician to St. Mary's and Lock Hospitals, &c. Second Edition. Crown 8vo, 6s.

A Dictionary of Medical Science :

Containing a concise Explanation of the various Subjects and Terms of Medicine, &c. ; Notices of Climate and Mineral Waters ; Formulæ for Official, Empirical, and Dietetic Preparations ; with the Accentuation and Etymology of the Terms, and the French and other Synonyms. By ROBLEY DUNGLISON, M.D., LL.D. New Edition. Royal 8vo, 28s.

A Medical Vocabulary :

Being an Explanation of all Terms and Phrases used in the various Departments of Medical Science and Practice, giving their Derivation, Meaning, Application, and Pronunciation. By ROBERT G. MAYNE, M.D., LL.D. Fifth Edition. Fcap. 8vo, 10s. 6d.

Abridged Medical Account

Books. The "Expedite" Method. By JAMES MACNAB, L.R.C.S.E. *Index Ledger*. Royal 4to. For three years, 15s. *Visiting List*. Cloth, 2s. 6d. ; Leather, 3s. 6d.

Medical Education

And Practice in all parts of the World. By HERBERT JUNIUS HARDWICKE, M.D., M.R.C.P. 8vo, 10s.

INDEX.

- Acton's Reproductive Organs, 14
 Adams (W.) on Clubfoot, 11
 Contraction of the Fingers, 11
 Curvature of the Spine, 11
 Allan on Fever Nursing, 7
 Allingham on Diseases of the Rectum, 13
 Anatomical Remembrancer, 4
 Anderson (McC.) on Eczema, 13
 Aveling's Influence of Posture on Women, 6
 Balfour's Diseases of the Heart and Aorta, 9
 Balkwill's Mechanical Dentistry, 13
 Bantock on Rupture of the Female Perineum, 6
 Barclay's Medical Diagnosis, 8
 Barnes on Obstetric Operations, 5
 on Diseases of Women, 5
 Beale's Microscope in Medicine, 8
 Slight Ailments, 8
 Bellamy's Surgical Anatomy, 3
 Bennet (J. H.) on the Mediterranean, 10
 on Pulmonary Consumption, 10
 on Nutrition, 10
 Bentley and Trimen's Medicinal Plants, 7
 Bentley's Manual of Botany, 7
 Bigg (H. H.) on Orthopraxy, 11
 Bigg (R. H.) on the Orthopragms of Spine, 11
 Binz's Elements of Therapeutics, 7
 Black on the Urinary Organs, 14
 Bose's Rational Therapeutics, 7
 Recognisant Medicine, 7
 Braune's Topographical Anatomy, 3
 Brodhurst's Anchylosis, 11
 Orthopædic Surgery, 11
 Bryant's Practice of Surgery, 11
 Bucknill and Tuke's Psychological Medicine, 5
 Bulkley on Eczema, 13
 on Diseases of the Skin, 13
 Burdett's Cottage Hospitals, 5
 Pay Hospitals, 5
 Burnett on the Ear, 12
 Burton's Midwifery for Midwives, 5
 Butlin's Sarcoma and Carcinoma, 13
 Buzzard's Diseases of the Nervous System, 9
 Carpenter's Human Physiology, 4
 Carter (H. V.) on Spirillum Fever, 7
 Carter (W.) on Renal and Urinary Diseases, 14
 Cayley's Typhoid Fever, 9
 Charteris' Practice of Medicine, 8
 Clark's Outlines of Surgery, 10
 Clay's (C.) Obstetric Surgery, 6
 Cobbold on Parasites, 14
 Coles' Dental Mechanics, 13
 Deformities of the Mouth, 13
 Cormack's Clinical Studies, 8
 Coulson on Stone in the Bladder, 14
 on Syphilis, 14
 on Diseases of the Bladder, 14
 Cripps' Cancer of the Rectum, 14
 Curling's Diseases of the Testis, 13
 Dagenet's Manual of Ophthalmoscopy, 12
 Dalby's Diseases and Injuries of the Ear, 12
 Dalton's Human Physiology, 4
 Day on Diseases of Children, 6
 on Headaches, 9
 De Chaumont's Sanitary Assurance, 4
 Dobell's Lectures on Winter Cough, 8
 Loss of Weight, &c., 8
 Mont Dore Cure, 8
 Domville's Manual for Nurses, 7
 Druiitt's Surgeon's Vade-Mecum, 11
 Duncan on the Female Perineum, 5
 on Diseases of Women, 5
 Dunglison's Medical Dictionary, 14
 Ellis's Manual for Mothers, 6
 of the Diseases of Children,
 Emmet's Gynæcology, 5
 Eulenburg and Guttmann's System of Nerves, 9
 Fayrer's Observations in India, 7
 Tropical Dysentery and Diarrhœa, 7
 Fenwick's Chronic Atrophy of the Stomach, 8
 Medical Diagnosis, 8
 Outlines of Medical Treatment, 8
 Ferguson's Practical Surgery, 10
 Flint on Phthisis, 8
 on Clinical Medicine, 8
 Flower's Diagrams of the Nerves, 4
 Foster's Clinical Medicine, 8
 Fox's (C. B.) Examinations of Water, Air, and Food, 4
 Fox's (G. H.) Photographs of Cutaneous Syphilis, 14
 Skin Diseases, 13
 Fox's (T.) Atlas of Skin Diseases, 13
 Frey's Histology and Histo-Chemistry, 4
 Fulton's Text-Book of Physiology, 4
 Galabin's Diseases of Women, 6
 Gamgee's Fractures of the Limbs, 11
 Treatment of Wounds, 11
 Gant's Diseases of the Bladder, 14
 Gaskoin on Psoriasis or Lepra, 13
 Gay on Hæmorrhoidal Disorder, 13
 Gill on Indigestion, 10
 Glenn's Laws affecting Medical Men, 14
 Godlee's Atlas of Human Anatomy, 3
 Gowers' Diseases of the Spinal Cord, 9
 Epilepsy, 9
 Medical Ophthalmoscopy, 9
 Pseudo-Hypertrophic Muscular Paralysis, 9
 Habershon's Diseases of the Abdomen, 9
 Stomach, 9
 Pneumogastric Nerve, 9
 Hamilton's Nervous Diseases, 9
 Hardwicke's Medical Education, 14
 Harris on Lithotomy, 14
 Harrison's Surgical Disorders of the Urinary Organs, 14
 Prevention of Stricture, 14
 Heath's Injuries and Diseases of the Jaws, 10
 Minor Surgery and Bandaging, 10
 Operative Surgery, 10
 Practical Anatomy, 10
 Surgical Diagnosis, 10
 Hemming on the Laryngoscope, 12
 Higgins' Ophthalmic Out-patient Practice, 11
 Hillis' Leprosy in British Guiana, 13
 Hogg's Indian Notes, 7
 Holden's Dissections, 3
 Human Osteology, 3
 Landmarks, 3
 Holmes' (G.) Guide to Use of Laryngoscope, 12
 Vocal Physiology and Hygiene, 12
 Hood on Gout, Rheumatism, &c., 9
 Hooper's Physicians' Vade-Mecum, 8
 Horton's Tropical Diseases, 7
 Hutchinson's Clinical Surgery, 11
 Rare Diseases of the Skin, 13
 Huth's Marriage of Near Kin, 4
 Ireland's Idiocy and Imbecility, 5
 Irvine's Relapse of Typhoid Fever, 8
 James on Sore Throat, 12
 Jones' (C. H.) Functional Nervous Disorders, 9
 Jones (C. H.) and Sieveking's Pathological Anatomy, 4
 Jones' (H. McN.) Aural Surgery, 12
 Atlas of Diseases of Membrana Tympani, 12
 Jones' (T. W.) Ophthalmic Medicine and Surgery, 11
 Jordan's Surgical Enquiries, 11
 Lancereaux's Atlas of Pathological Anatomy, 4
 Lane's Lectures on Syphilis, 14
 Lee (H.) on Syphilis, 14
 Leared on Imperfect Digestion, 10
 Lewis (Bevan) on the Human Brain, 4
 Liebreich's Atlas of Ophthalmoscopy, 11
 Liveing's Megrin, Sick Headache, &c., 10
 Lucas's Indian Hygiene, 8
 Macdonald's (A.) Chronic Disease of the Heart, 6
 Macdonald's (J. D.) Examination of Water, 4
 Macewen's Osteotomy: Knock-knee, Bow-leg, &c., 11
 Mackenzie on Diphtheria, 12
 on Diseases of the Throat and Nose, 12
 MacLise's Dislocations and Fractures, 11
 Surgical Anatomy, 3
 MacMunn's Spectroscopy in Medicine, 8
 Macnab's Medical Account Books, 14
 Macnamara's Diseases of Bones and Joints, 11
 the Eye, 12
 Madden's Principal Health-Resorts, 10
 Martin's Military and State Medicine, 5
 Mason on Hare-Lip and Cleft Palate, 12
 on Surgery of the Face, 12
 Mayne's Medical Vocabulary, 14
 Mitchell (R.) on Cancer Life, 13
 Mitchell's (S. Weir) Nervous System in Women, 6

[Continued on the next page]

- Moore's Family Medicine for India, 7
 ——— Health Resorts for Tropical Invalids, 7
 Morris' (H.) Anatomy of the Joints, 3
 Nettleship's Diseases of the Eye, 12
 Nunn's Cancer of the Breast, 13
 Ogston's Medical Jurisprudence, 4
 Osborn on Diseases of the Testis, 13
 ——— on Hydrocele, 13
 Parkes' Practical Hygiene, 5
 Pavy on Diabetes, 10
 ——— on Food and Dietetics, 10
 Peacock's Diseases of the Heart, 9
 Pharmacopœia of the London Hospital, 7
 Phillips' Materia Medica and Therapeutics, 7
 Pirrie's Principles and Practice of Surgery, 11
 Pollock on Rheumatism, 9
 Pridham on Asthma, 8
 Purcell on Cancer, 13
 Radford's Cæsarean Section, 5
 Ralfe's Morbid Condition of the Urine, 14
 Ramsbotham's Obstetrics, 6
 Reynolds' (J. J.) Diseases of Women, 6
 ——— Notes on Midwifery, 6
 Reynolds' (J. R.) Clinical Electricity, 10
 Roberts' (C.) Manual of Anthropometry, 5
 Roberts' (D. Lloyd) Practice of Midwifery, 5
 Ross's Diseases of the Nervous System, 9
 Roth on Dress: Its Sanitary Aspect, 5
 Roussel's Transfusion of Blood, 8
 Routh's Infant Feeding, 6
 Royle and Harley's Materia Medica, 7
 Sanderson's Physiological Handbook, 4
 Sansom's Diseases of the Heart, 9
 ——— Antiseptic System, 9
 Savage on the Female Pelvic Organs, 6
 Sayre's Orthopædic Surgery, 11
 Schroeder's Manual of Midwifery, 6
 Sewill's Dental Anatomy, 12
 Sheppard on Madness, 5
 Sibson's Medical Anatomy, 3
 Sieveking's Life Assurance, 14
 Smith's (E.) Wasting Diseases of Children, 6
 ——— Clinical Studies, 6
 Smith's (Henry) Surgery of the Rectum, 14
 Smith's (Heywood) Dysmenorrhœa, 6
 ——— Gynæcology, 6
 Smith (Priestley) on Glaucoma, 12
 Sparks on the Riviera, 10
 Squire's Companion to the Pharmacopœia, 7
 Squire's Pharmacopœias of London Hospitals, 7
 Stillé and Maisch's National Dispensary, 7
 Sullivan's Tropical Diseases, 7
 Swain's Surgical Emergencies, 10
 Swayne's Obstetric Aphorisms, 6
 Taft's Operative Dentistry, 12
 Taylor's Medical Jurisprudence, 4
 ——— Poisons in relation to Medical Jurisprudence, 4
 Teale's Dangers to Health, 5
 Thomas on Ear and Throat Diseases, 12
 Thompson's (Sir H.) Calculous Disease, 13
 ——— Diseases of the Urinary Organs, 13
 ——— Diseases of the Prostate, 13
 ——— Lithotomy and Lithotripsy, 13
 Thompson's (Dr. H.) Clinical Lectures, 8
 Thorowgood on Asthma, 8
 ——— on Materia Medica and Therapeutics, 7
 Thudichum's Pathology of the Urine, 14
 Tibbits' Medical and Surgical Electricity, 10
 ——— Map of Motor Points, 10
 Tidy and Woodman's Forensic Medicine, 4
 Tilt's Change of Life, 6
 ——— Uterine Therapeutics, 6
 Tomes' (C. S.) Dental Anatomy, 12
 ——— (J. & C. S.) Dental Surgery, 12
 Van Buren on the Genito-Urinary Organs, 14
 Veitch's Handbook for Nurses, 6
 Virchow's Post-mortem Examinations, 4
 Wagstaffe's Human Osteology, 3
 Walker's Ophthalmology, 12
 Waring's Indian Bazaar Medicines, 7
 ——— Practical Therapeutics, 7
 Warner's Guide to Medical Case-Taking, 8
 Waters' (A. T. H.) Diseases of the Chest, 8
 Waters (J. H.) on Fits, 9
 Wells (Spencer) on Ovarian and Uterine Tumours, 6
 West and Duncan's Diseases of Women, 5
 Whistler's Syphilis of the Larynx, 12
 Whitehead's (J. L.) Climate of the Undercliff, 10
 Whittaker's Primer on the Urine, 14
 Wilks' Diseases of the Nervous System, 9
 Wilks and Moxon's Pathological Anatomy, 4
 Wilson's (Sir E.) Anatomists' Vade-Mecum, 3
 ——— Lectures on Dermatology, 13
 Wilson's (G.) Handbook of Hygiene, 5
 ——— Healthy Life and Dwellings, 5
 Wilson's (W. S.) Ocean as a Health-Resort, 10
 Wise's Davos Platz, 10
 Wolfe's Diseases and Injuries of the Eye, 11

The following CATALOGUES issued by J. & A. CHURCHILL will be forwarded post free on application:—

A. J. & A. Churchill's General List of about 650 works on Anatomy, Physiology, Hygiene, Midwifery, Materia Medica, Medicine, Surgery, Chemistry, Botany, &c., &c., with a complete Index to their Subjects, for easy reference. N.B.—This List includes B, C, & D.

B. Selection from J. & A. Churchill's General List, comprising all recent Works published by them on the Art and Science of Medicine.

C. J. & A. Churchill's Catalogue of Text Books specially arranged for Students.

D. A selected and descriptive List of J. & A. Churchill's Works on Chemistry, Materia Medica, Pharmacy, Botany, Photography, Zoology, the Microscope, and other branches of Science.

E. The Half-yearly List of New Works and New Editions published by J. & A. Churchill during the previous six months, together with Particulars of the Periodicals issued from their House.

[Sent in January and July of each year to every Medical Practitioner in the United Kingdom whose name and address can be ascertained. A large number are also sent to the United States of America, Continental Europe, India, and the Colonies.]

AMERICA.—J. & A. Churchill being in constant communication with various publishing houses in Boston, New York, and Philadelphia, are able, notwithstanding the absence of international copyright, to conduct negotiations favourable to English Authors.

LONDON: NEW BURLINGTON STREET.

